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Atlas of Wide-Field-of-View Outgoing Longwave Radiation Derived From Nimbus 7 Earth Radiation Budget Data Set— November 1978 to October 1985

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Introduction

One important aspect of climate processes of the Earth is an understanding of the radiative exchange between the Earth, the Sun, and the atmosphere. Before the age of satellites, ground-based observations were made to determine the radiation balance. One of the first studies of the radiation balance of the Earth was done by Simpson (1928). London (1957) made one of the most comprehensive studies of the radiation balance before satellites began making measurements.

Measurements from the U.S.'s first satellites were used to study the Earth's radiation budget. The development of the Earth radiation budget observational system evolved from the early 1960's to the present with the overall advancement of rocket and spacecraft technology. An excellent review of the history of satellite missions for measuring the Earth's radiation budget is given by House et al. (1986).

During the period from 1964 through the 1970's, a number of research satellites of the Nimbus series were flown to study experimental concepts in the atmospheric sciences. One of the concepts tested was the Earth radiation budget (ERB) experiment (Smith et al. 1977 and Jacobowitz et al. 1979) which was included in the payloads of the Nimbus 6 and Nimbus 7 satellites. The Nimbus 6 satellite was flown in June 1975, and in November 1978 an ERB instrument was flown aboard the polar orbiting Nimbus 7 satellite. This experiment provided measurements of the radiation entering and exiting the Earth atmosphere system.

For more than 7 years the Nimbus 7 operated in a continuous mode to provide the research scientist with an ongoing record of Earth radiation measurements. This 7-year time series data base is one of the largest continuous records for studying the Earth's radiation balance that is available from satellite data.

The ERB experiment was launched into a nearly circular Sun-synchronous Earth orbit aboard the Nimbus 7 satellite in November 1978 and operated through the spring of 1986. The ERB instrument package flown on the Nimbus 7 satellite included two Earth-viewing wide-field-of-view (WFOV) radiometers, one of which measured total irradiance and the other of which measured shortwave (SW) irradiance. The difference between the two (Total − SW) is the outgoing longwave radiation (OLR). These WFOV radiometers viewed the entire Earth's disk from the Nimbus 7 satellite, which had an altitude of 955 km and Equator crossing times near 12:00 a.m. (noon) and 12:00 p.m. (midnight). The SW channel had a spectral range of 0.2 to 3.8 μm, and the total channel measured the irradiance from 0.2 to 50+ μm. The first data were taken by Nimbus 7 on November 16, 1978. Nimbus 7 continued to collect usable Earth radiation data through April 1986, providing a continuous 7-year data set.

This paper is an atlas which contains monthly averaged OLR results estimated at the top of the atmosphere (denoted by TOA and defined herein to be an altitude of 30 km) for the 7 years of Nimbus 7 operation spanning the time period from November 1978 to October 1985. A number of researchers have analyzed and published selected results of the WFOV broadband OLR measurements from the Nimbus 7 ERB radiometers. Jacobowitz and Tighe (1984) published a study of the first year of the Nimbus 7 radiation budget data set. Their study included an analysis of OLR results which spanned the time period from November 1978 to October 1979. They made comparisons of the WFOV OLR with the scanning narrow-field-of-view (NFOV) radiometers. Limited simultaneous comparisons were also made between the ERB results and those from the NOAA-7 operational satellite. Kyle, Ardanuy, and Hucek (1986) and Ardanuy and Kyle (1986) published results of a 41-month subset of the OLR data set that included contour maps of OLR and monthly averaged anomaly maps defined in terms of departures from the climatology for the month. The main emphasis of their study was the analysis of the broadband daytime longwave radiation data set with respect to the temporal and spatial evolution of the El Nino/Southern Oscillation anomalies in 1982 and 1983.

The purpose of this atlas is to document all the WFOV OLR results from 7 years of Nimbus 7 operation in a form that allows analysis of the radiation field of the Earth. The measurements have been adjusted with the correction factor from Kyle, Ardanuy, and Hurley (1985). The results contained in this atlas were derived with a deconvolution (i.e., a resolution enhancement) technique which represented the WFOV monthly averaged OLR as an expansion of spherical harmonic coefficients (Smith and Green 1981). Tables of these coefficients along with monthly averaged contour maps of OLR results for 7 years are included.

The results documented in this atlas are important for a number of reasons. One relates to the data, which are both broadband and WFOV data. Because the measurements are broadband, the ERB radiometers offer some significant advantages over the instruments aboard NOAA operational-type polar orbiting satellites, which measure upwelling radiation in the narrow spectral regions (0.5 to 0.7 μm in the visible region and 10.5 to 12.5 μm in the infrared region). Winston et al. (1979) published an atlas which documented 4 years of OLR results from the scanning

radiometer (SR) on the NOAA operational satellites. Janowiak et al. (1985) also published an atlas of OLR results derived from NOAA operational satellite data which covered the time period from June 1974 to November 1983. The primary disadvantage of measurements made by NOAA operational satellites is that measurements are made in narrow spectral regions which must then be empirically corrected to estimate the broadband OLR. Their big advantage is their very high spatial resolution compared with the WFOV radiometer, which is limited to large scales.

The WFOV instrument is also well suited for measuring large-scale features since its field of view is such that the instrument measures all incident radiation from horizon to horizon. Herein lies one of its advantages since the measured radiation is integrated over a broad variation of angles, and thus is less sensitive to directional models than are data measured by narrow-field-of-view radiometers.

In regards to stability of instruments, scanning radiometers and fixed-WFOV radiometers tend to be very stable over time in the infrared region of the spectrum, but they experience degradation in the SW region. However, because of their mechanical simplicity, fixed-WFOV radiometers typically have greater longevity than do scanning radiometers. For instance, the fixed-WFOV radiometer on Nimbus 6 operated uninterruped for 3 years, and the Nimbus 7 fixed-WFOV radiometer has been operational for over 7 years.

In addition to the data being broadband and WFOV, the method of representing the data using spherical harmonics is important. The spherical harmonic coefficient data set for each month represents a condensation of the OLR field. Some of these coefficients have a physical interpretation attached to them. These coefficients may be analyzed individually or in combination to study different aspects of the radiation field. The results from Nimbus 7 also represent the continuation of a long-term time series of OLR for the ERB WFOV-type instruments that began with 3 years of data from Nimbus 6 (Bess and Smith 1987). Thus, the 3-year data base from Nimbus 6 plus the 7-year data base from Nimbus 7 give a time series of OLR results covering 10 years. This time series data will be very valuable for doing monthly, annual, and interannual studies of OLR.
The authors are grateful to H. L. Kyle of the NASA Goddard Space Flight Center and H. Jacobowitz of NOAA for providing the Nimbus 7 data tapes which made this research possible. Also, many thanks to T. P. Charlock, J. J. Buglia, and W. F. Staylor for their many suggestions and to M. A. Woerner for her programming help along the way.

Data Processing and Analysis

The 7 years of ERB WFOV irradiance data from the Nimbus 7 satellite covering the time period from November 1978 to October 1985 were supplied by the Nimbus 7 Project. Only the OLR data are documented in this atlas.

The nominal duty cycle of the ERB radiometer on Nimbus 7 was 3 days on and 1 day off. When the radiometer was turned on, measurements were taken at 4-sec intervals along the orbital track. The data tapes supplied by NOAA contain data reduced by averaging four consecutive measurements, resulting in one averaged value every 16 sec.

Although the Nimbus 7 ERB radiometer was initially constrained to operate on a duty cycle of 3 days on followed by 1 day off, this constraint was relaxed in September 1983 because of the failure of two other experiments, and the ERB radiometer operated without interruption most of the time except in the summer and fall of 1984, when the regular duty cycle of 3 days on and 1 day off was in effect. The sampling strategy of 3 days on and 1 day off normally tends to change the true radiant exitance. However, the absence of a continuous daily data set did not seriously constrain monthly averaged WFOV data since the data were smoothed in the averaging process over 1 month and over the large spatial area of the WFOV radiometer. Green and Smith (1978) looked at the temporal variation over six duty cycles of 2 days each for 1 month of Nimbus 6 data. Their results showed very little change from one duty cycle to another on a global and zonal scale. Small changes occurred for some regions.

The other inherent sampling bias characteristic of all Sun-synchronous polar orbiting satellites is that they measure OLR at only two local times. For Nimbus 7, 12:00 a.m. (noon) and 12:00 p.m. (midnight) were the equator crossing times. Because of this sampling bias, diurnal variations cannot be studied.

These tapes were processed by taking daily measurements and averaging over 1 month and over 5° increments in latitude that formed an igloo-type grid system of near-equal-area regions. The igloo grid system is symmetrical about the Equator and has 3 grids at the polar regions from 85° to 90° latitude and 72 grids at the equatorial region from 0° to 5° latitude. Figure 1 is a sketch of the igloo grid system for the Northern Hemisphere showing the number of grids in each 5° latitude region. The total number of near-equal-area grids is 827. The igloo grid system is symmetrical about the Equator, giving a total of 1654 grids over the Earth.

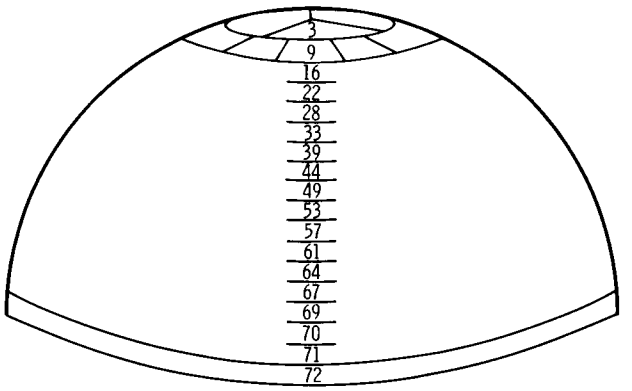

Figure 1. Igloo grid system for near-equal-area grids showing number of grids in each 5° zone for Northern Hemisphere.

Some corrections and editing had to be made to the ERB WFOV measurements before they were suitable for data analysis. Sun contamination is a problem which occurs near sunrise and sunset with the WFOV radiometer because the field of view is larger than the Earth's disk, and hence it views the Sun directly. Measurements were eliminated when the solar zenith angle at the nadir (or subsatellite) point was between 99° and 123°. This was the range of angles used previously by other investigators when analyzing Nimbus 7 ERB WFOV data (Kyle et al. 1984). With the range of solar zenith angles specified by the Nimbus 7 investigators, it was found that another possible source of error in OLR measurements, caused by a thermal transient in SW measurements because of irradiance of the sensor at spacecraft sunset, was eliminated. Other editing had to be performed occasionally because of anomalies in the data that have been well documented (Bess, Green, and Smith 1981).

The first 5 years of archived measurements from Nimbus 7 were adjusted by applying a correction factor (Kyle, Ardanuy, and Hurley 1985) which was based on an improved WFOV calibration algorithm used to produce measurements from years 6 and 7 of the Nimbus 7 data set. The calibration adjustment evolved from what is known as the Pacific adjustment procedure. After the failure of the scanner on Nimbus 7 in June of 1980, the WFOV total channel was used as a comparison standard for the SW channels, and the comparison was made while the radiometer was viewing the central Pacific Ocean. The calibration adjustment is based on the use of global averages as a comparison standard, which corrected some of the shortcomings of the Pacific procedure. The correction factors resulted in a reasonably homogeneous 5-year ERB WFOV data set and increased the emitted longwave flux by about 8 to 11 W/m^2. The day and night emitted fluxes were also more consistent with those observed with the ERB NFOV scanner.

After the measurement data were corrected for errors and were time- and space-averaged to obtain regional monthly averages, a deconvolution (resolution enhancement) technique was applied to represent the radiant exitance at the TOA by a truncated series of spherical harmonics. The deconvolution technique takes advantage of the fact that spherical harmonics are the eigenfunctions of the measurements operator and reduces the radiant exitance field from satellite altitude to TOA by dividing by the appropriate eigenvalues. All the results in this atlas are based on this deconvolution technique, which has been well documented (Smith and Green 1981 and Bess, Green, and Smith 1981).

The governing equation from which the monthly spherical harmonic coefficients were produced is

$$M(\theta,\phi,t) = \sum_{n=0}^{N}\sum_{m=0}^{n} N_n^m P_n^m(\cos\theta)\left[C_n^m(t)\cos(m\phi) + S_n^m(t)\sin(m\phi)\right]$$

where $M(\theta,\phi,t)$ is the measurement at the TOA, θ is colatitude, ϕ is the longitude, t is the time, and P_n^m is the associated Legendre polynomial of degree n and order m. The terms $C_n^m(t)$ and $S_n^m(t)$ are the even and odd real spherical harmonic coefficients, and the normalizing factor is

$$N_n^m = [(2n+1)(n-m)!(2-\delta_0^m)/(n+m)!]^{1/2}$$

where δ_0^m is the Kronecker delta function.

Discussion of Results

Included in this atlas are spherical harmonic coefficients and associated global contour maps of 84 months of Nimbus 7 ERB WFOV outgoing longwave radiation results. It is not the intent in this atlas to do an in-depth analysis of the data but to compile and document the spherical harmonic coefficients and the associated contour maps which can then be used to do many kinds of valuable analysis.

Each table in this atlas contains a set of spherical harmonic coefficients for 1 month of mean values. Results are for a spherical harmonic expansion truncated to 12th degree. For such a 12th-degree expansion, 169 coefficients are required to specify the radiation field. The coefficients above the stair-step line are the 78 sine terms. With the exception of the first column, the coefficients below the stair-step line

are the 78 cosine terms. The first column contains the 13 zonal terms. The sine and cosine terms represent the nonaxisymmetric terms and give a measure of longitudinal variation. The format of the tables makes it very easy to pick off any coefficient. The superscript m is the longitudinal wave number or order and n represents the degree of the spherical harmonic. Thus, in the first column, which represents the zonal terms, m is 0 and n ranges from 0 to 12. Physical interpretations can be associated with some of the zonal terms. Thus, C_0^0 is the global average, C_1^0 is a measure of hemispherical or pole-to-pole difference, and C_2^0 is a measure of Equator-to-pole gradient. It has been shown that over 80 percent of the degree variance is in the zonal terms (Smith and Bess 1983). This variance is because at large scales, Earth-emitted radiation is strongly dependent on latitude.

The monthly averaged spherical harmonic data sets can be used in a variety of ways to study the OLR on regional, zonal, and global scales in the spatial domain and on monthly, annual, and interannual scales in the time domain. One application is to model the global radiation field. The advantage of such models is that they can represent large data sets with relatively few parameters. Another advantage of a spherical harmonic representation is that it provides a mathematical structure that permits one to study separately the latitudinal variations using the zonal coefficients and the longitudinal variations and wave properties using tesseral coefficients. In short, spherical harmonic representation allows the radiation field to be broken into its component parts, which can then be studied separately or in various combinations. For example, the coefficients are well suited for time series analysis, spatial spectra studies, and parameterization studies (Smith and Bess 1983 and Short et al. 1984).

In this atlas each spherical harmonic coefficient set has a companion monthly averaged global contour map of OLR. The OLR less than 240 W/m^2 is shown as dotted contour lines. The contour interval is 10 W/m^2, and highs and lows are shown. These contour maps give a "quick look" of how the OLR is varying over monthly, annual, and interannual time scales. With their associated sets of harmonic coefficients, they form a valuable data set for studying many different aspects of our changing climate.

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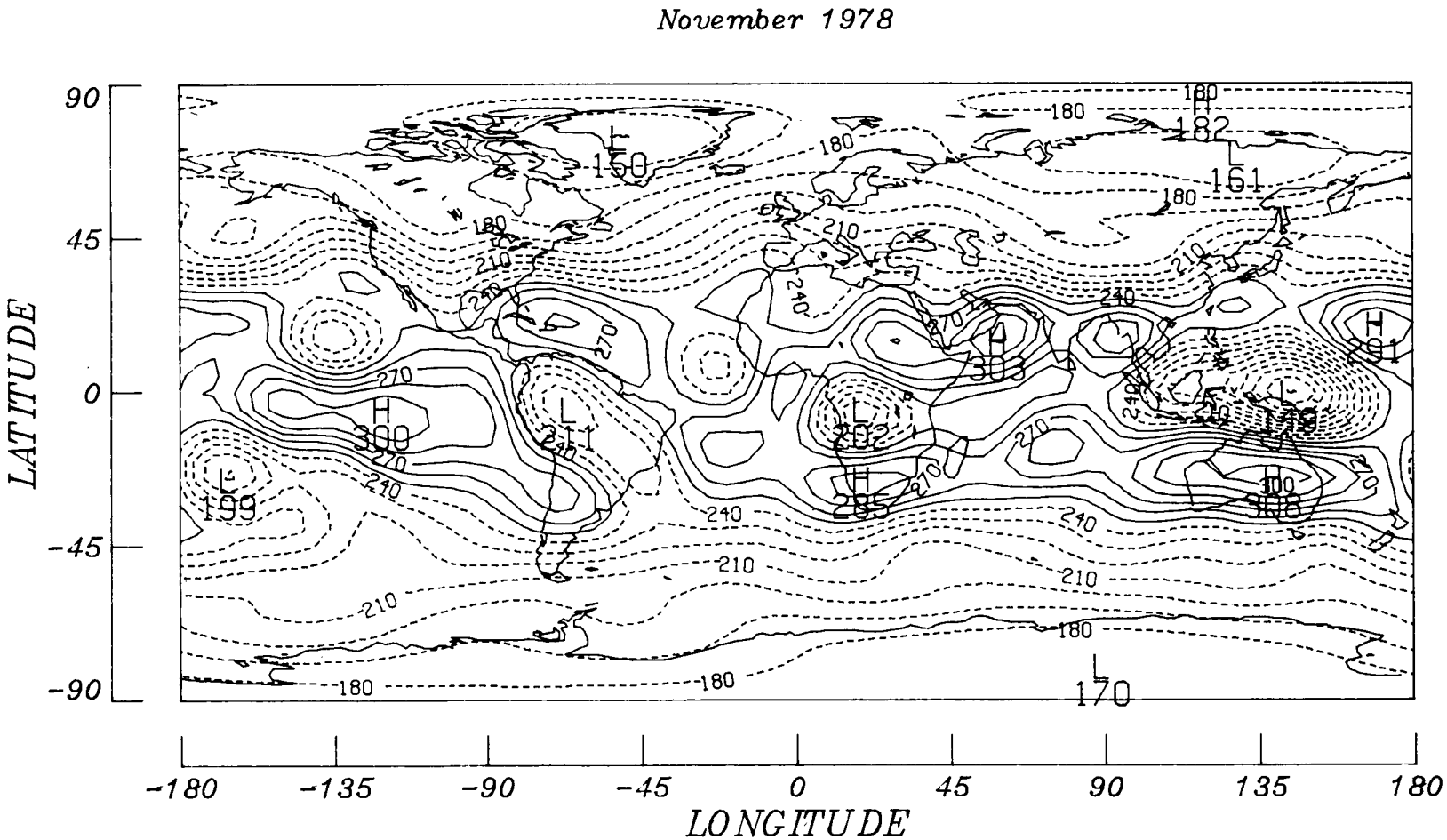
November 1978

C_n^m

		12	11	10	9	8	7	6	5	4	3	2	1	m/n
0	232.244	.207	-1.083	-.575	-.779	-.344	.073	-.002	-.771	.636	1.781	-.424	-.267	12
1	-6.457	1.483	.350	-1.247	.516	-.389	.348	-.532	.053	-.168	-.649	.218	2.093	11
2	-26.319	1.575	-.946	-1.858	-.139	.734	.146	.098	1.168	-.420	-2.051	1.906	2.443	10
3	.196	-1.635	2.731	-.681	.880	.554	-.240	-1.179	-.221	1.369	2.088	1.073	-3.632	9
4	-4.100	.204	3.032	-3.202	2.931	-2.031	-.555	-1.330	-1.450	.019	1.588	-2.450	-1.617	8
5	2.430	.126	.025	1.201	-.548	-1.555	.542	.246	.347	-2.901	-3.890	.016	3.750	7
6	6.491	.420	.947	4.610	-1.545	-.773	.694	-.862	.333	1.428	.109	5.725	1.239	6
7	-.610	-.403	.729	.058	-1.636	2.386	1.005	.354	-.621	.738	3.298	-.212	-4.180	5
8	-4.100	-1.751	-1.114	-2.539	.784	.876	.120	.772	.920	-1.177	-.944	-4.599	1.880	4
9	.589	-.059	-.731	-.403	.959	-.619	-.124	-1.673	-.138	1.086	-.467	2.244	1.845	3
10	1.772	1.624	1.245	-.241	.430	-.248	.288	-1.569	-1.949	-.176	-.173	4.020	-.212	2
11	.817	-.175	.113	.173	1.045	-.444	-.236	.221	.612	-1.106	-1.198	.545	-.332	1
12	.281	-1.182	-.274	1.111	-.342	-.203	-.089	.840	1.911	.942	-.032	.705	1.168	
n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	

S_n^m

November 1978



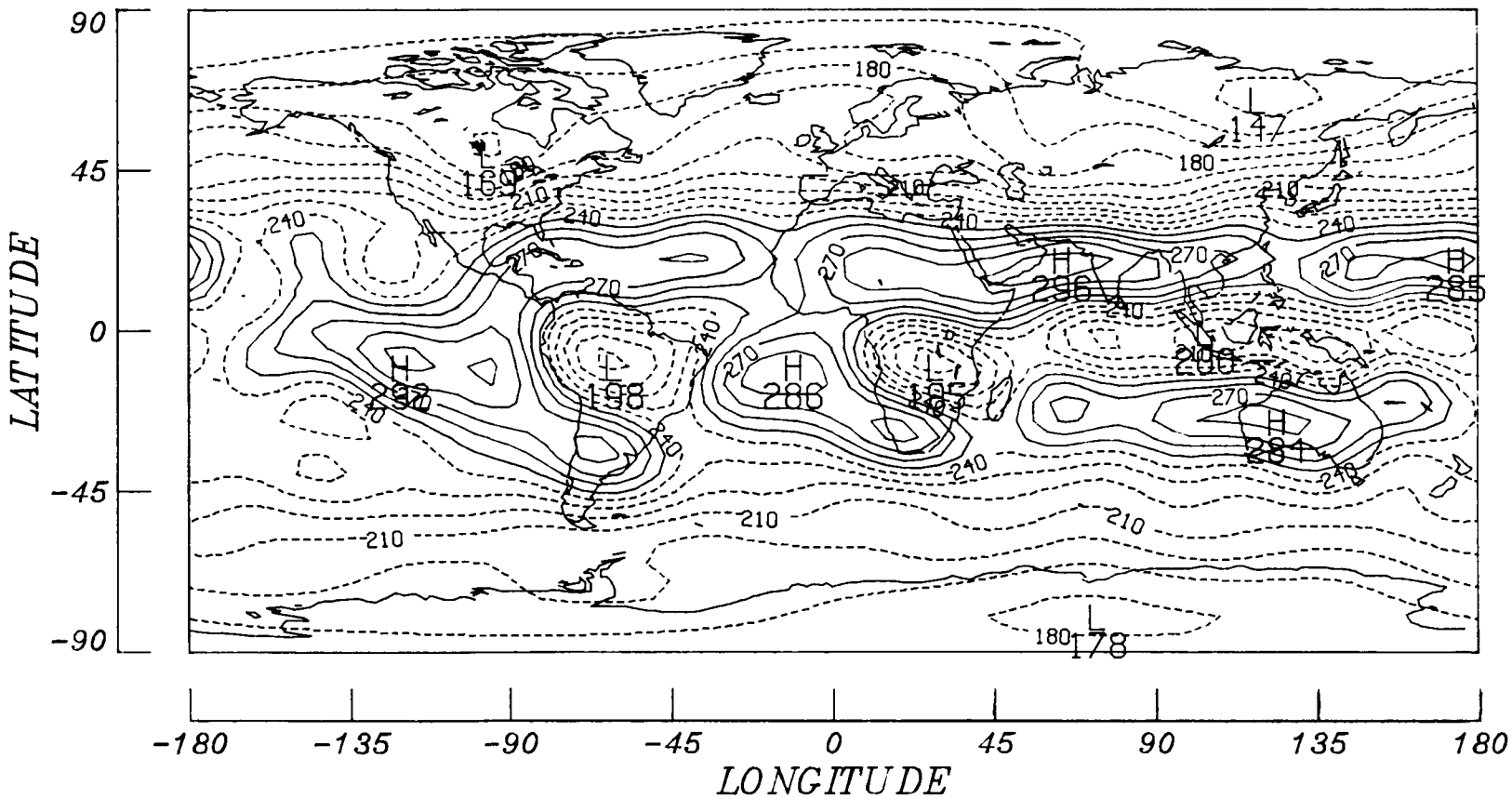
December 1978

C_n^m

n/m	0	12	11	10	9	8	7	6	5	4	3	2	1	m/n
0	230.047	.313	.127	-.422	-.311	-.430	-.558	-.228	-.203	1.087	.971	-.725	-.438	12
1	-7.976	2.525	.148	.161	.514	.597	-1.465	.549	.316	-1.146	.319	-.009	1.309	11
2	-26.075	1.794	.024	.372	.214	.317	.523	-.558	.987	-1.108	-1.357	1.368	2.392	10
3	-3.038	-.620	3.185	2.385	-.006	-.248	.611	-.452	-.459	1.984	.499	.691	-3.353	9
4	-3.875	.006	1.010	-2.919	1.995	.468	.403	.327	-1.400	-.497	1.788	-1.984	-1.543	8
5	5.242	-.004	.746	-1.767	-1.543	1.127	1.131	-.315	1.500	-2.446	-1.549	-.201	3.448	7
6	7.791	2.284	1.730	3.480	-.741	-.030	-.579	-.825	1.354	3.207	-1.723	3.603	1.621	6
7	-2.991	1.656	-.551	1.051	1.310	.542	-.564	.946	-1.882	.800	.312	.373	-3.785	5
8	-5.696	-1.286	-.513	-2.110	-1.011	-.438	.477	-.265	.687	-2.411	-.689	-2.531	-1.765	4
9	.381	-.328	.355	-1.060	-.523	-.370	.235	-1.109	1.121	-.004	1.293	.280	.064	3
10	1.896	.473	.601	.337	1.807	.408	-.020	.022	-1.190	-.314	-.323	.672	.420	2
11	.242	-.440	-.230	.641	.385	-.300	-.347	-.104	-.704	-.539	1.197	-.293	-2.353	1
12	-.468	-.322	-.309	.647	-.289	.134	-.056	-.556	.586	1.609	.595	-.809	.935	
n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	

S_n^m

December 1978



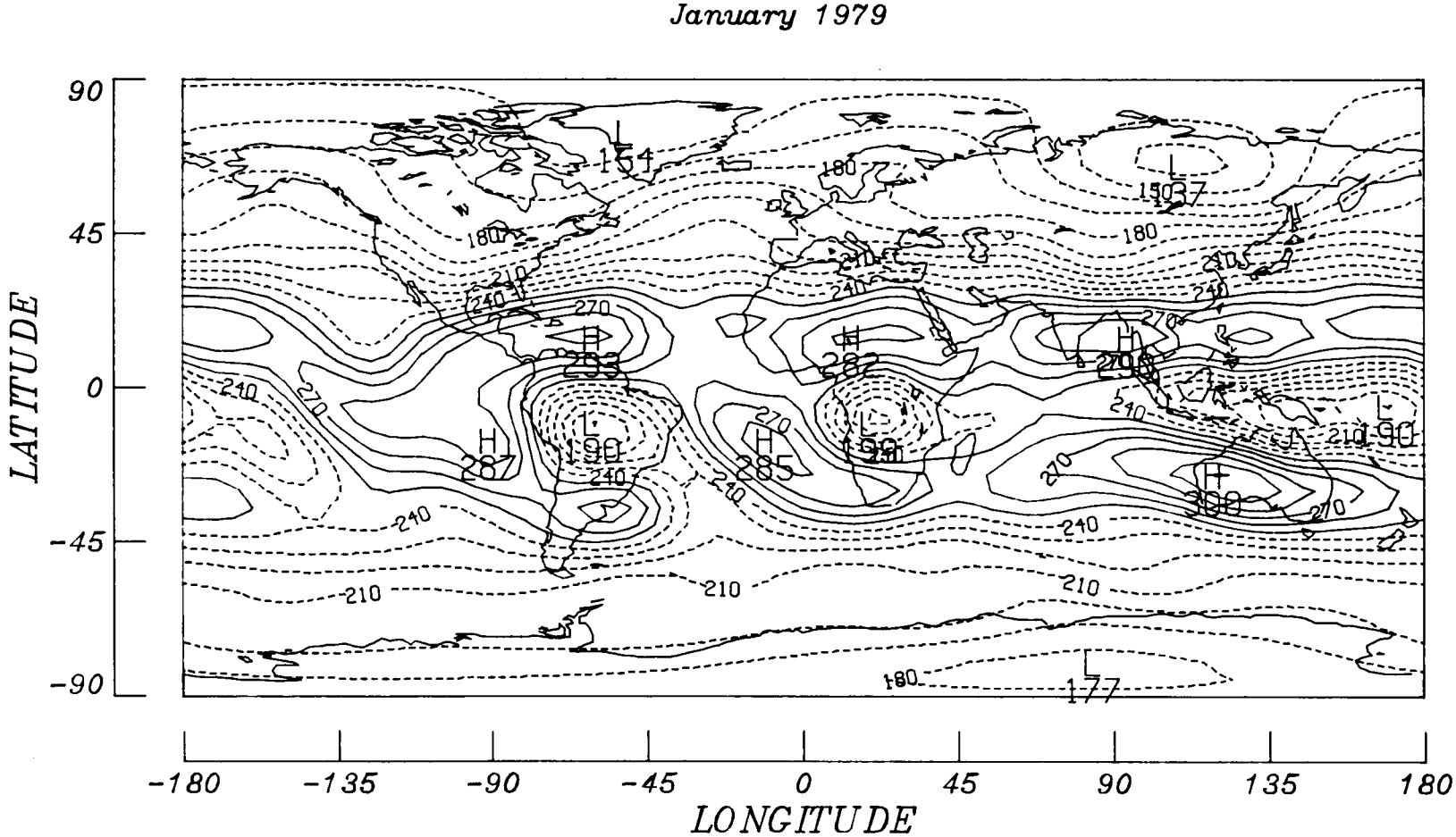
January 1979

C_n^m

		12	11	10	9	8	7	6	5	4	3	2	1	m/n
0	231.073	1.235	.230	-.719	-.342	.091	.330	-.545	.119	.186	.900	-.177	-.487	12
1	-10.234	1.530	.097	-.086	-.711	.494	.158	.967	-.487	-1.068	.836	-.181	.262	11
2	-26.590	.506	-2.507	.378	.732	-.092	.209	-.034	.505	-.044	-1.067	.832	2.109	10
3	-2.859	-1.861	3.662	2.448	-.491	-.592	-.083	-1.831	-.080	1.897	.664	1.793	-2.049	9
4	-3.232	.561	4.535	-3.794	2.351	-.136	-.323	.440	-1.480	-1.205	1.774	-.539	-.897	8
5	6.963	1.394	.385	-1.988	-1.528	.533	-.067	.818	1.418	-3.338	-2.437	-.975	3.336	7
6	6.276	-.744	-.223	3.368	-1.253	.016	-.166	-.255	.922	1.706	-1.636	3.751	.650	6
7	-5.739	-.533	.963	.325	.439	.672	-.723	-.060	-1.993	1.651	1.227	2.170	-4.514	5
8	-4.000	.129	.368	-1.919	-1.022	-.923	1.275	-.079	1.001	-1.056	-.664	-2.331	-.334	4
9	3.381	-.203	-.203	.306	-.177	.217	-.308	-.402	-.835	.530	-.326	-.404	.030	3
10	.982	-.121	1.092	-.116	2.012	.520	-.175	-.365	-.671	-.908	.084	1.246	-.770	2
11	-.364	-.269	-.415	-.559	.132	-.518	.231	.327	-.064	.043	.194	.348	-.937	1
12	-.373	.327	-.578	.420	-1.170	.155	-.702	.324	.049	.259	-.807	-.002	-.058	
n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	

S_n^m

January 1979



February 1979

C_n^m

		12	11	10	9	8	7	6	5	4	3	2	1	m/n
0	231.653	.143	-.012	-.323	-.101	.412	.102	-.466	-.285	.026	1.407	-1.272	.267	12
1	-8.340	4.018	.581	-.406	.065	.151	.165	-.138	.919	-1.042	.970	-.959	.307	11
2	-27.799	1.349	-.840	-.037	-.279	-.167	.033	.311	.493	-.062	-1.447	1.816	2.369	10
3	-2.693	-1.385	2.591	3.807	.427	-.466	-.145	-.715	-.953	.622	.582	2.019	-1.808	9
4	-4.354	-1.684	2.740	-3.022	1.350	-.563	-.325	-.486	-1.261	-.389	2.145	-1.550	-1.514	8
5	7.759	-.933	1.818	-1.352	-1.202	-.176	-.972	.587	1.232	-.114	-2.951	-2.189	1.122	7
6	6.422	2.358	1.342	3.274	-.682	-.363	1.076	-1.699	2.265	1.967	-2.968	2.709	2.966	6
7	-4.593	1.786	.410	-.897	.895	.497	.828	.707	-3.679	-1.045	1.655	2.104	-2.694	5
8	-5.920	-1.378	1.302	-2.370	-1.087	-.472	.356	-.135	.972	-2.509	.530	-1.503	-1.810	4
9	3.496	-.936	1.217	.339	-.329	.464	-.744	-.132	.111	.546	-.624	-.913	.804	3
10	3.516	.485	.661	.386	2.056	.622	-.473	-.500	-.637	.145	.109	.868	2.244	2
11	.798	-.634	-.877	-.067	.387	-.369	.079	.693	.407	-.242	-.143	-.599	-2.614	1
12	-.546	.039	-.213	.366	-1.267	-.036	-.021	.245	-.219	-.210	1.146	.582	1.274	
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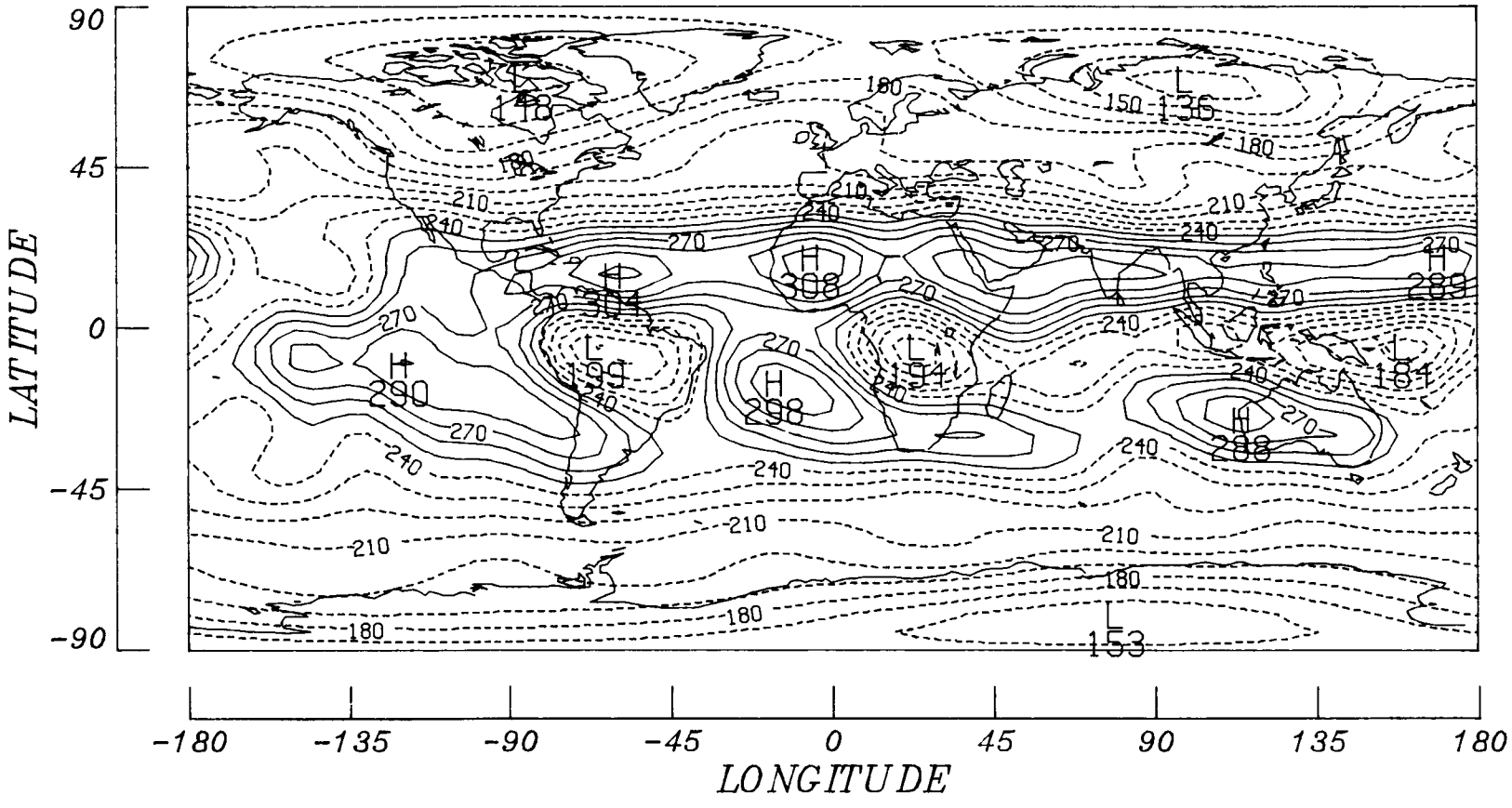
S_n^m

February 1979



March 1979

C_n^m

		12	11	10	9	8	7	6	5	4	3	2	1	m/n
0	231.770	-.265	-.024	-1.119	.012	.103	-.146	-.116	-.302	.483	1.327	-.934	.481	12
1	-4.486	2.879	.537	-.159	.092	-.139	-.016	.607	.561	-.693	.346	-.450	.603	11
2	-27.013	1.139	-.640	.201	-.423	.393	.483	-.344	.253	-.445	-1.001	1.483	2.346	10
3	.184	-.510	1.599	.812	.332	-.548	-.265	-1.193	-1.053	1.721	1.148	1.110	-2.644	9
4	-5.807	.888	1.759	-2.395	2.287	-.721	.025	.531	-.561	-1.051	1.108	-1.219	-1.837	8
5	6.173	-.570	.921	-.710	-.197	-1.071	-.681	.083	1.591	-2.101	-2.893	-1.292	1.616	7
6	5.082	-.510	.855	3.373	-1.753	-1.088	-.702	.006	.779	1.989	-1.209	2.674	4.528	6
7	-3.582	.413	-.826	-.471	-.214	1.074	-.184	-.108	-3.962	.640	2.207	1.304	-2.191	5
8	-6.071	-.185	.419	-1.986	-.748	.153	.544	-.170	1.723	-2.600	-.301	-2.444	.353	4
9	3.433	.380	1.454	.224	.032	-.642	.079	-.371	-.556	.512	-1.384	.576	-.181	3
10	3.103	1.123	.479	.106	1.406	-.404	-.393	-.215	-.937	-.535	-.638	3.934	.697	2
11	.246	-.747	-1.228	-.407	.113	-.445	.162	.284	.331	.201	.176	.324	-1.258	1
12	-.899	-.835	.521	.596	-.640	.272	.164	-.204	.464	.953	.149	.853	-.270	
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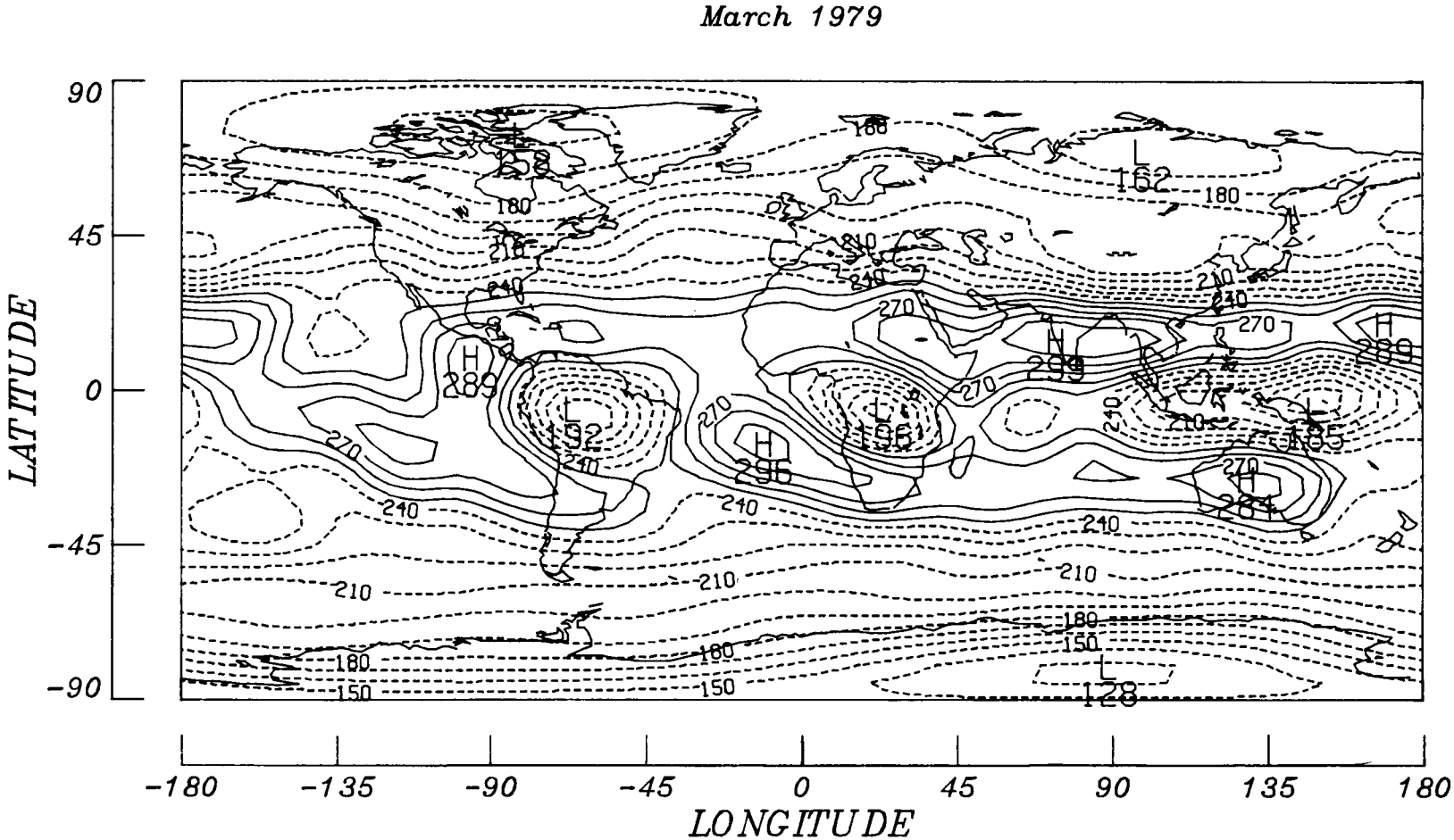
S_n^m


March 1979
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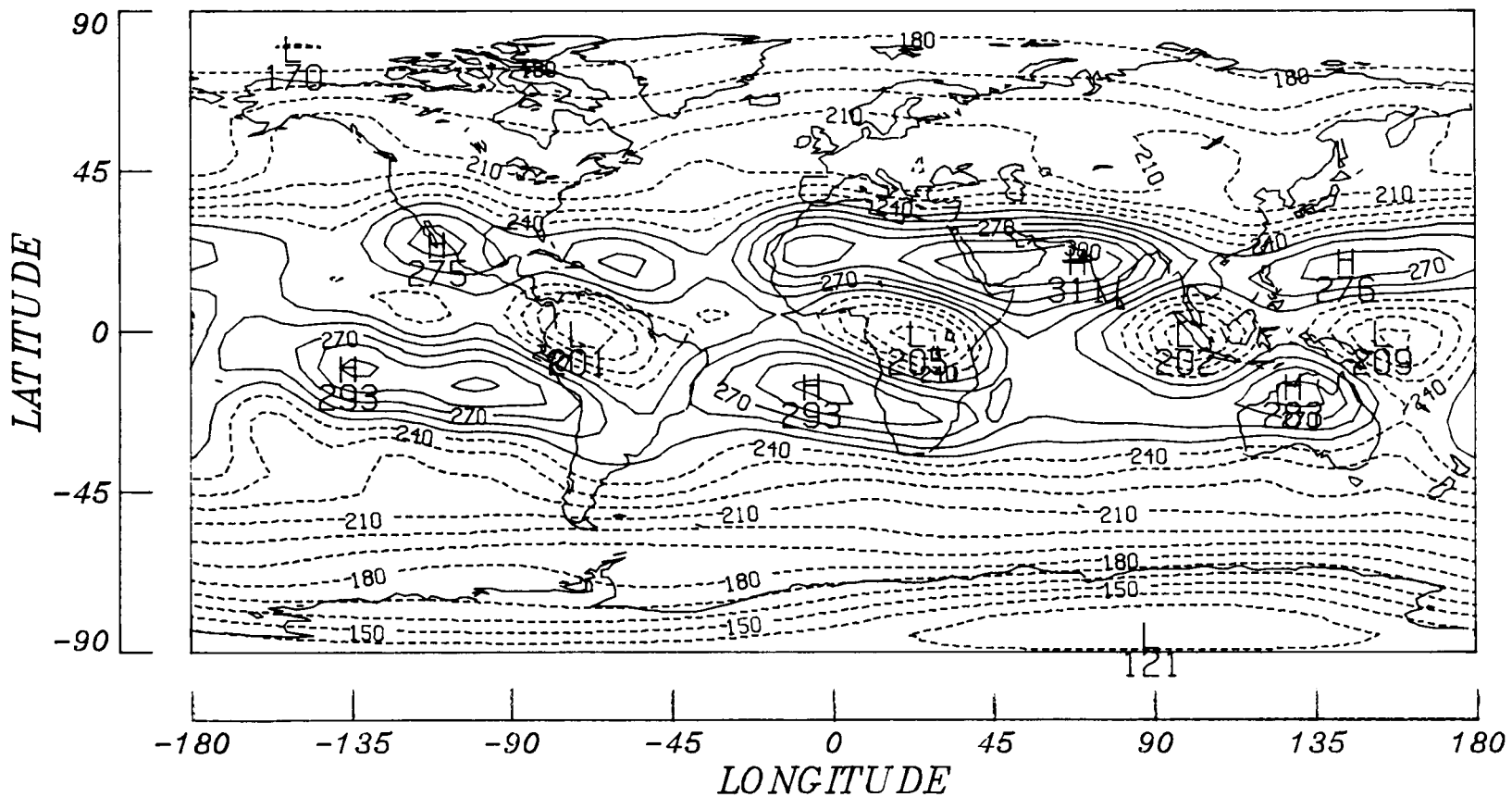
April 1979

C_n^m

		12	11	10	9	8	7	6	5	4	3	2	1	m/n
0	233.293	-.211	.372	-.485	.275	.138	.211	-.204	-.020	-.227	.537	-1.012	.332	12
1	1.949	3.467	-.151	-.246	.175	.529	.385	-.311	.634	-.883	-.730	-.429	.030	11
2	-27.037	1.432	.372	.450	-.353	.038	.292	-.013	.720	.002	-.304	.897	1.965	10
3	2.643	.234	.876	.704	-.443	-.892	-.977	-.196	-1.290	.974	1.814	1.105	-2.466	9
4	-5.822	-.132	.756	-1.132	-.706	-.918	-1.000	-.290	-.736	-.338	.331	-.137	-1.399	8
5	2.701	-1.854	-.607	-.812	-.146	1.039	-.170	-.022	2.414	-.495	-2.667	-.928	.965	7
6	4.846	.418	.298	3.618	1.105	.152	1.611	1.291	.514	1.070	-.516	1.105	3.588	6
7	-.040	2.555	-.043	.149	.344	-.267	.188	-.344	-3.620	-1.700	1.185	-.334	-1.306	5
8	-7.940	-.457	.163	-2.154	-1.613	.354	.179	1.420	1.453	-3.019	.059	-1.303	-.980	4
9	-1.689	-1.098	.132	.586	-.821	-.380	.034	-.035	-.933	-.108	-.199	2.026	-1.063	3
10	3.837	.527	.959	.659	.655	-.538	-.029	.056	-.398	.384	-.280	3.985	1.136	2
11	1.993	.346	-.541	-.950	.484	.462	-.664	.657	.191	-.431	-.628	-.133	.509	1
12	-.961	.143	-.437	.417	.207	.783	-.527	.364	.205	.256	.824	-.006	-.309	
n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	

S_n^m

April 1979



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LONGITUDE
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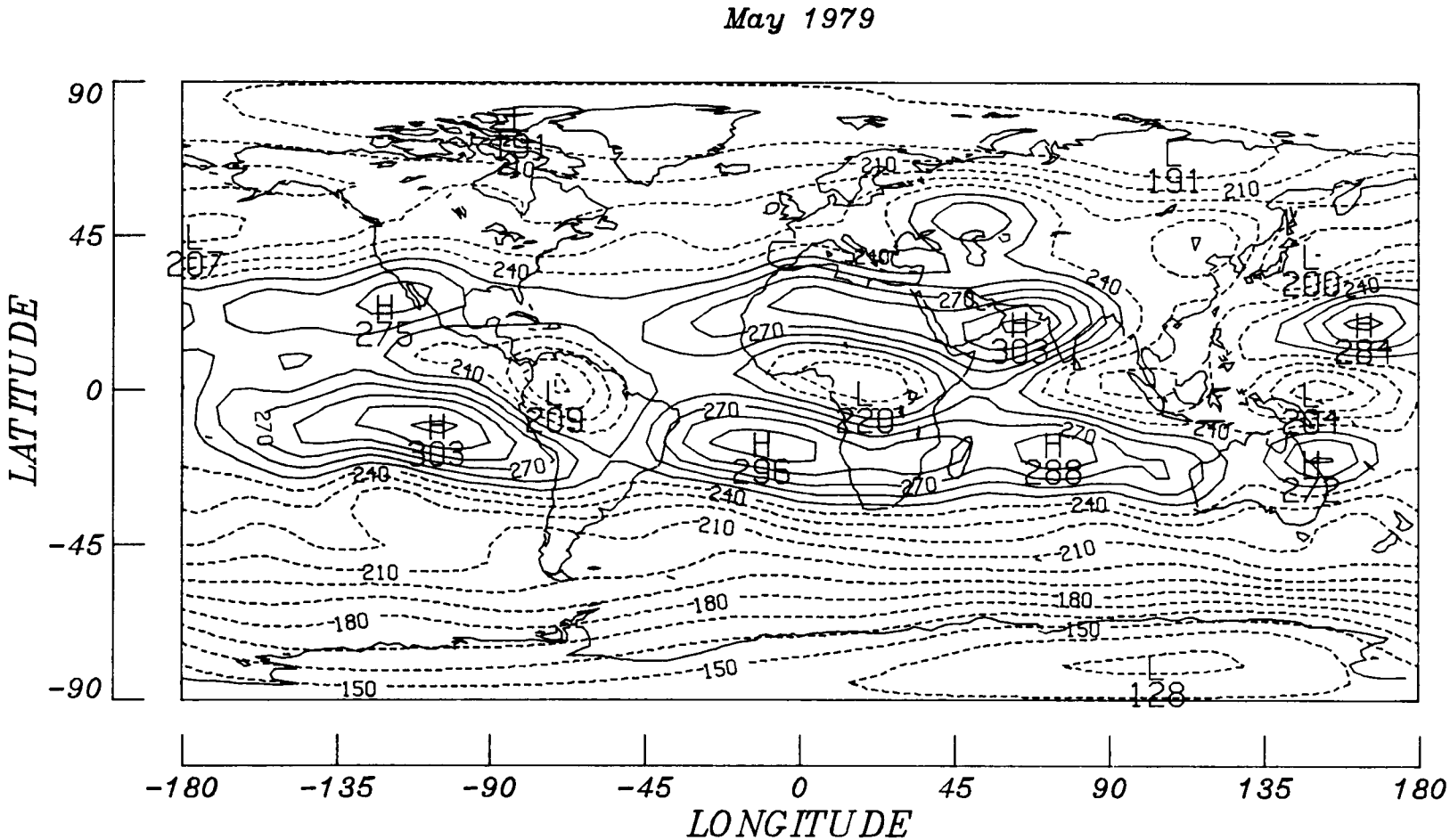
May 1979

C_n^m

		12	11	10	9	8	7	6	5	4	3	2	1	m/n
0	234.818	.172	.221	.047	.327	-.008	.217	-.232	.200	.935	-.031	-.276	.471	12
1	8.472	4.013	.160	-.614	-.032	-.259	.140	-.592	.528	-1.214	-.818	-1.551	1.373	11
2	-24.733	1.591	.755	.187	.312	-.329	.024	.495	-.440	-.937	.083	.488	1.899	10
3	5.049	-.412	.505	.375	-.310	-.080	.356	-.077	-1.447	.689	1.104	1.240	-1.569	9
4	-5.242	1.069	-.755	-1.539	-.622	-.212	.250	-.399	-.825	-.252	.731	.108	-2.169	8
5	-1.746	-2.037	-1.409	-.189	-1.029	-.238	.655	.331	1.021	.174	-.680	-.591	-.076	7
6	3.863	-1.968	-.169	1.983	.834	-.420	-.086	.162	.355	1.786	.073	1.013	2.128	6
7	2.589	1.265	1.473	.014	.811	.714	1.380	.321	-2.060	-1.370	1.650	.198	-3.593	5
8	-6.003	-.469	1.367	-2.030	-1.836	-.337	.303	-.388	.158	-3.354	-.409	-.592	1.837	4
9	-2.376	-1.092	.509	-1.499	-1.350	-1.556	.056	.327	-.144	.409	-1.077	1.595	1.260	3
10	4.514	.474	.241	.783	.472	-.117	1.386	.272	-.787	.049	-.307	6.278	.781	2
11	1.569	.360	-.632	.592	.423	.908	.213	.183	-.213	.199	-.844	.138	-.609	1
12	-.548	.279	-.094	.059	.829	.163	-1.063	.270	.693	.678	.666	.297	-.092	
n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	

S_n^m

May 1979



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L 191
L 200
H 284
L 204
H 272
L 128
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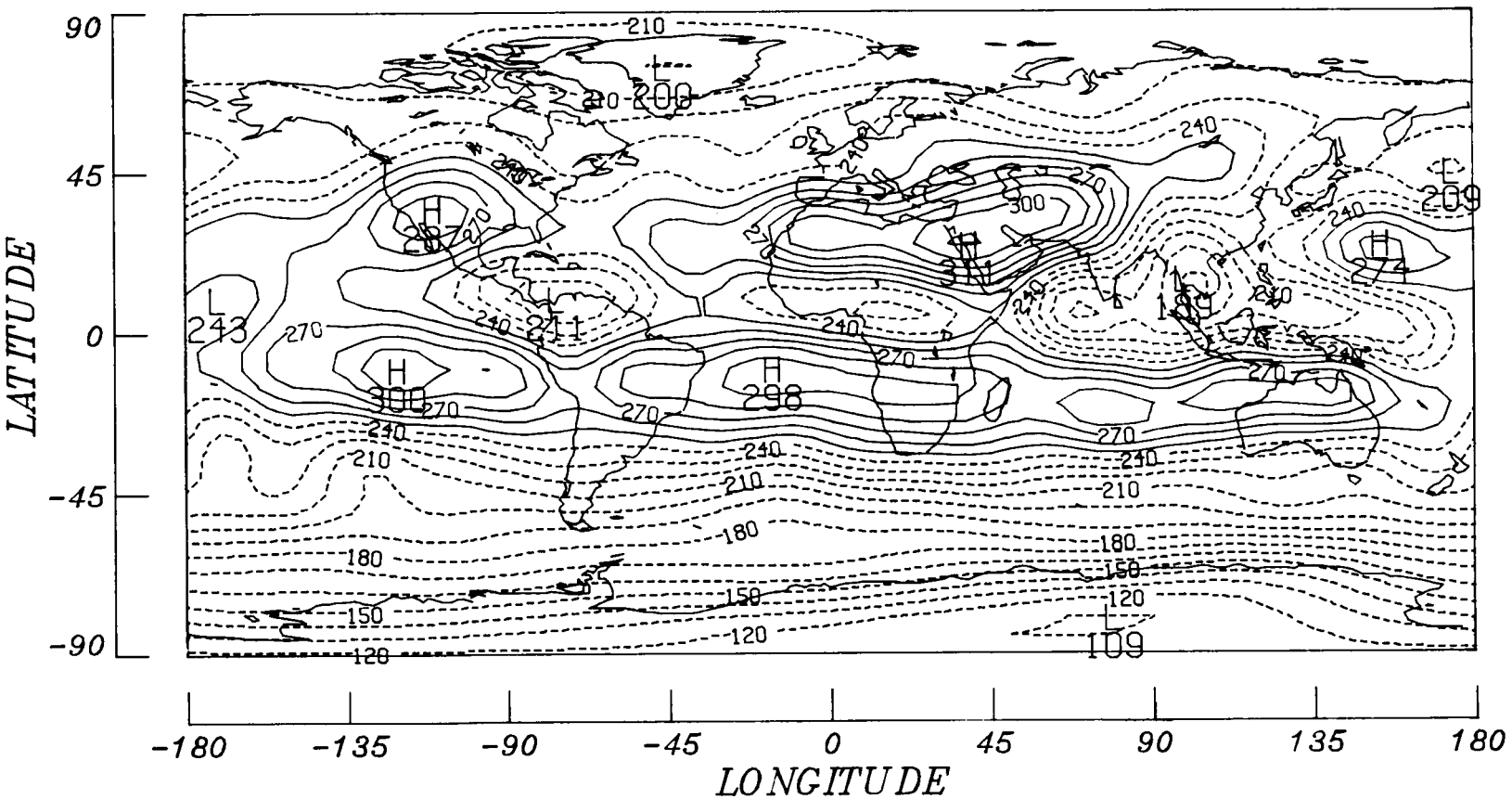
June 1979

C_n^m

		12	11	10	9	8	7	6	5	4	3	2	1	m/n
0	236.347	-.404	-.993	-.269	-1.393	-.044	.171	.154	-.329	-.224	-.584	-.211	-.215	12
1	12.773	5.075	.464	.329	-.280	.350	.143	-.426	.424	.538	-.262	.301	.718	11
2	-23.625	1.947	2.887	.297	-.011	-.224	-.423	-.012	.673	-.030	.820	1.293	1.345	10
3	9.037	-.415	1.749	1.406	.082	-.038	.188	.553	-.595	.959	1.344	.466	-1.787	9
4	-7.924	1.481	-2.542	-.683	-2.899	-.710	-.400	.648	-.629	1.033	.047	-.645	-.247	8
5	-5.164	-3.385	-3.852	-1.415	-1.280	-1.326	-.066	.005	.206	-.269	-1.603	-.930	1.537	7
6	4.748	-2.662	.364	2.638	.722	-.287	-.123	.284	-.343	-.640	-.534	-.205	.869	6
7	6.738	1.494	2.167	.841	.404	.526	.598	.706	-.559	-2.072	1.736	-1.354	-4.374	5
8	-4.682	.885	1.728	-.911	.192	-.098	-.038	.553	.646	-2.018	1.064	.319	3.141	4
9	-3.603	-.249	.363	.531	.027	-1.211	.739	.438	.204	.726	1.171	4.460	3.575	3
10	1.622	-.297	-.011	.619	-.484	-.881	.559	.572	-.669	.741	.001	5.259	-.478	2
11	1.768	-1.033	-1.521	-.241	-.276	-.010	-.680	.717	-.493	.722	.248	-.938	-2.364	1
12	.116	1.057	-.200	-.004	.843	.196	-.337	.148	-.137	-.229	.464	-.038	.372	
n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	

S_n^m

June 1979



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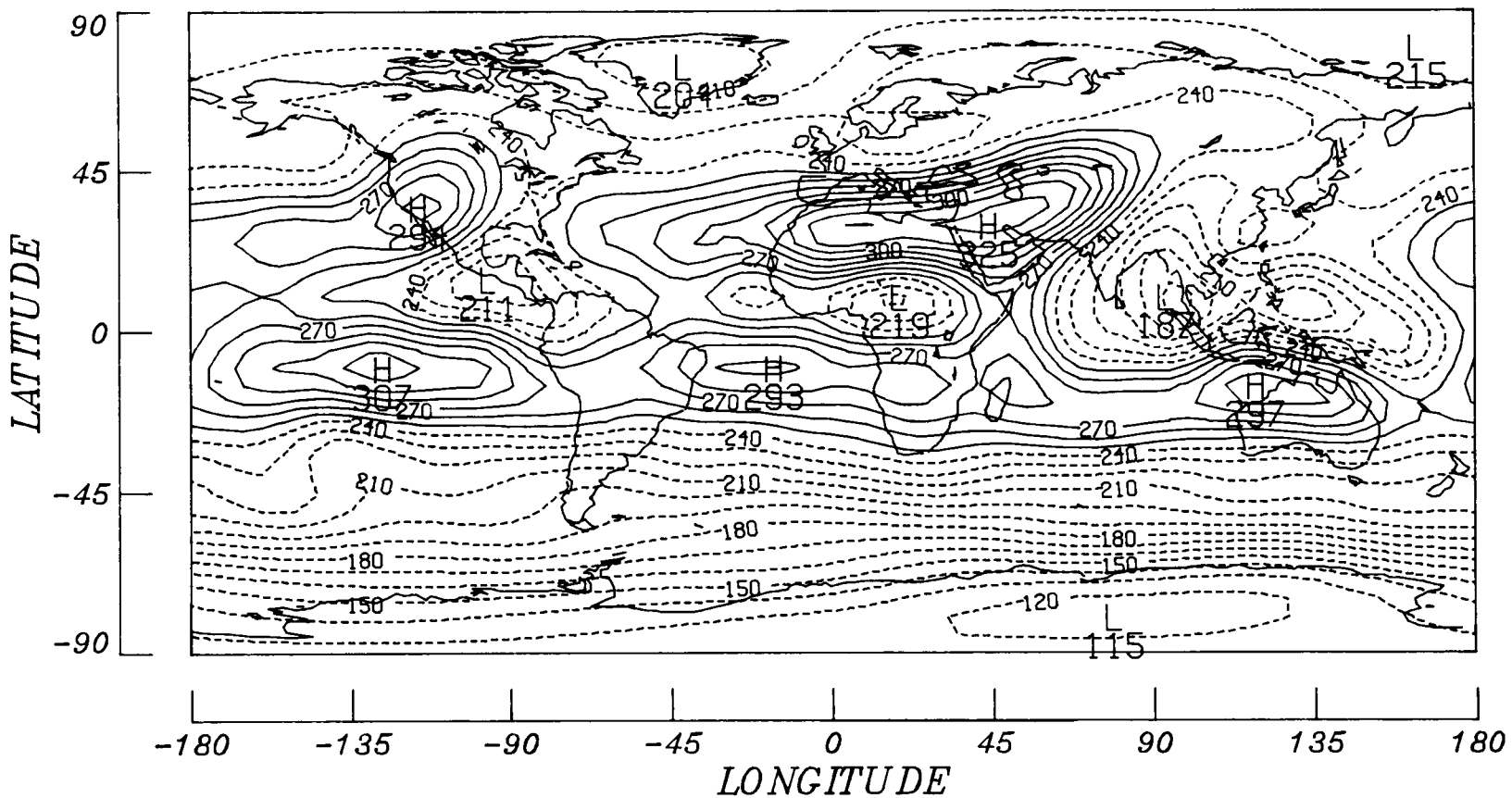
July 1979

C_n^m / S_n^m

		12	11	10	9	8	7	6	5	4	3	2	1	m/n
0	238.325	-1.230	.040	-.498	.322	-.345	-.388	-.208	-.239	.144	.342	.122	-.732	12
1	15.597	4.003	-.015	-.027	.253	-.109	.101	.035	.016	1.351	.172	.526	.537	11
2	-23.210	4.426	4.457	.534	.282	.209	-.156	.547	.313	.815	.189	1.938	1.299	10
3	9.434	-.908	2.534	-.194	-.053	-.295	-.243	1.039	-.567	-.417	.455	1.339	-.846	9
4	-7.936	-.925	-2.180	-2.030	-3.531	.147	.376	1.205	-.860	-1.052	-.092	-.884	-.449	8
5	-5.435	-3.019	-4.839	-.114	-1.775	-1.590	.081	-1.001	.073	-1.172	-1.855	-1.445	1.485	7
6	4.146	-1.550	-1.747	2.697	.439	-.147	2.573	-.064	.126	-1.074	.047	-.224	1.461	6
7	7.487	1.381	1.070	-.070	.186	.584	2.148	.645	-2.651	-1.430	1.691	-.779	-4.255	5
8	-3.231	1.030	1.078	-1.675	.527	-.130	.815	.686	.170	-.307	.106	.954	3.571	4
9	-4.773	1.334	1.100	.596	.887	-.546	.976	-.101	-.013	.565	-.738	3.998	2.944	3
10	1.045	-.372	.658	2.339	.197	.232	.140	-.550	-.867	.840	.084	6.527	-.483	2
11	.848	-1.235	-1.410	.097	-.679	.374	-.090	.187	-.368	.321	.501	-.484	-2.333	1
12	.468	.720	-.539	-1.016	.218	-.480	-.270	-.017	-.410	-.456	.530	-.113	.208	
n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	

July 1979



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H 325
L 182
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L 115
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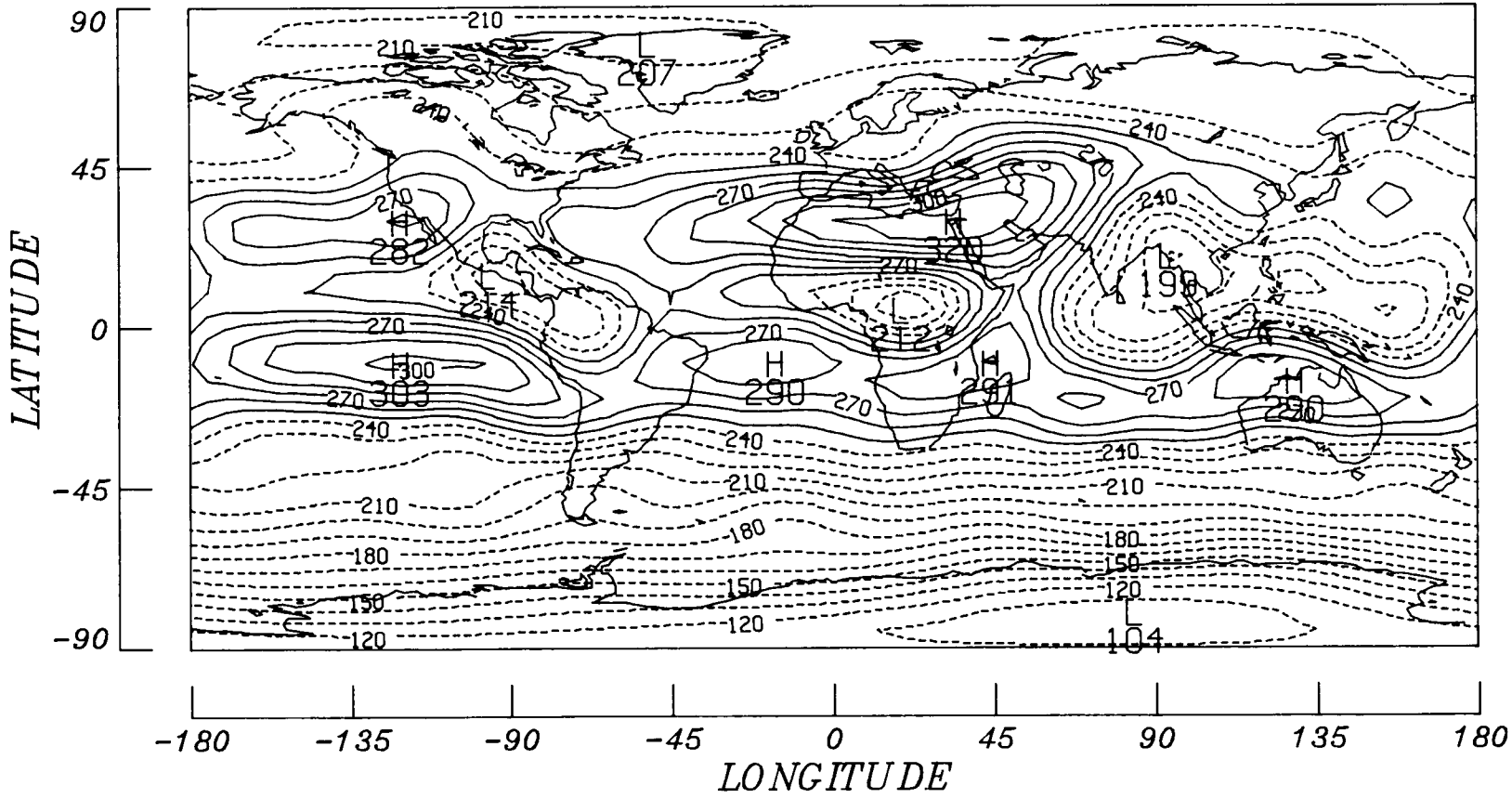
August 1979

C_n^m

		12	11	10	9	8	7	6	5	4	3	2	1	m/n
0	239.182	-.110	-.549	-.141	-.281	-.106	-.194	.539	-.349	.109	.226	-.377	-.171	12
1	14.781	4.068	.127	.329	-.266	-.369	.096	-.734	1.113	.815	-.163	-1.171	.532	11
2	-24.051	4.442	3.085	.078	.110	.623	.115	.135	.892	.276	.580	.540	2.107	10
3	9.040	-.533	2.259	.170	-.185	.298	.105	-.213	-1.040	-.619	.897	1.045	-.139	9
4	-8.481	-1.632	-.749	-1.592	-3.665	.369	-.576	-.116	-.989	-1.168	-.712	-.469	-.508	8
5	-5.570	-3.268	-3.324	-.672	-2.466	-1.558	.019	-.243	1.192	-.960	-1.663	-.373	.029	7
6	3.220	-.204	-.908	1.707	.601	-.111	1.893	-.157	-.303	-.566	.872	.692	.397	6
7	8.218	1.697	.132	.544	-.054	1.089	1.371	.762	-3.169	-.485	1.803	-.542	-3.692	5
8	-3.066	.306	1.130	-1.556	-.393	-.462	.077	.742	.613	-.601	-.223	.610	3.176	4
9	-3.860	-.114	1.099	-.283	.312	-1.335	.084	-.625	-.566	.311	-.328	3.425	2.849	3
10	.319	-.368	.957	2.146	-.052	.541	.444	.146	-1.370	.671	.100	5.375	-.183	2
11	.949	-.507	-1.636	.766	-.897	.546	-.052	.813	-.332	.330	.266	-.671	-2.341	1
12	.270	.607	-.578	-.601	.239	-.204	-.447	.257	.478	.414	.420	-.275	.035	
n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	

S_n^m

August 1979



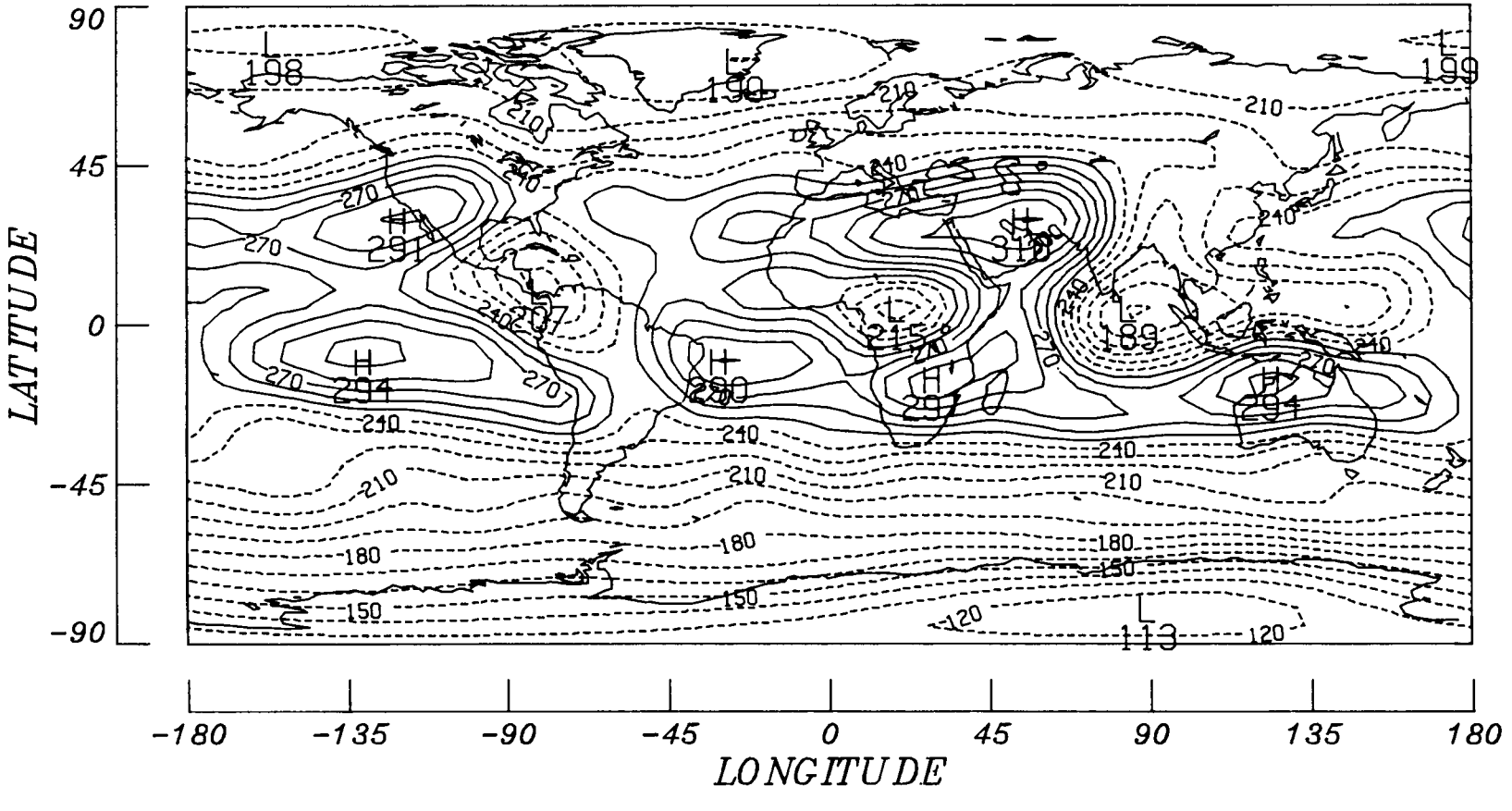
September 1979

C_n^m

		12	11	10	9	8	7	6	5	4	3	2	1	m/n
0	235.497	-.313	.523	.279	-.199	-.500	-.167	.310	-.422	-.626	.635	-.258	.236	12
1	10.386	2.748	-.212	.144	-.254	-.268	-.071	-.489	.379	.585	-.039	-.464	.680	11
2	-25.359	2.085	3.512	.008	-.094	-.075	-.126	-.167	.885	.693	.211	.978	.890	10
3	5.701	-.755	1.863	.631	.175	.165	.333	-.191	-.633	.282	.600	1.145	-2.717	9
4	-7.624	.348	-1.606	-1.296	-5.185	.164	-.068	.442	-.659	-.515	-.810	.111	.049	8
5	-3.667	-1.472	-2.773	-.635	-2.061	-2.199	1.035	.654	1.225	-1.017	-1.368	-.350	1.987	7
6	4.490	-1.041	.516	1.933	1.650	-.741	2.041	-.939	.098	.024	1.465	-.059	1.238	6
7	6.855	.595	.540	.548	.178	.738	2.107	.885	-2.884	-1.890	1.042	-1.484	-3.340	5
8	-3.602	-.465	.304	-1.110	-.371	-.273	.407	.572	.300	-2.739	-.393	-.164	2.446	4
9	-3.034	.012	.478	.498	1.217	-.700	-.605	-.958	-.011	-.130	.772	4.619	1.795	3
10	.897	.299	.266	1.056	.029	-.064	.481	-.276	-1.289	-.711	-.038	6.641	-.810	2
11	1.071	-.155	-1.560	-.962	-.593	.341	.305	1.302	-.872	-.420	.159	.357	-1.802	1
12	.421	.676	-.153	-.788	.293	-.121	-.673	.131	.533	-.289	.481	-.266	.195	
n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	

S_n^m

September 1979



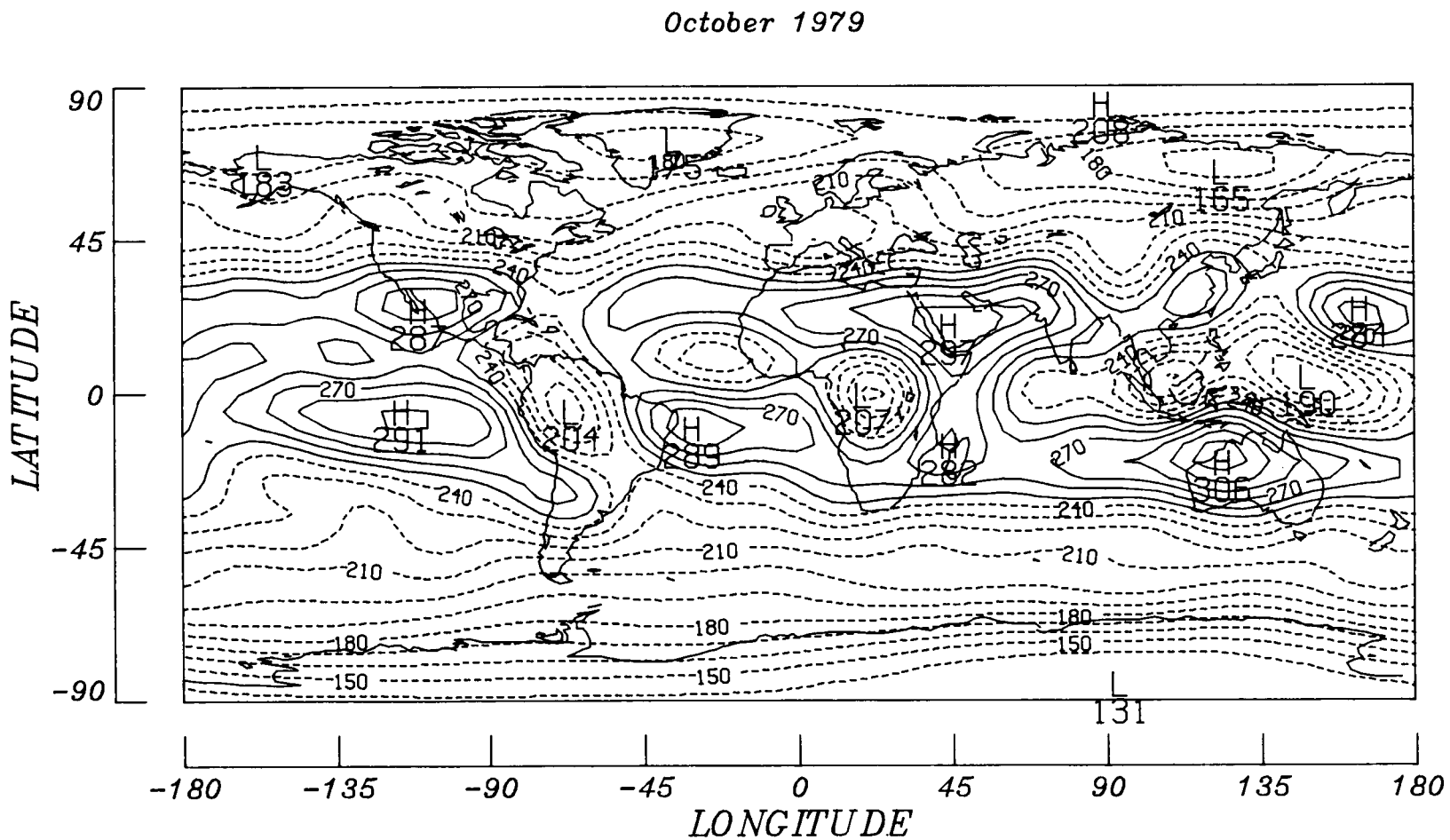
October 1979

C_n^m

		12	11	10	9	8	7	6	5	4	3	2	1	m/n
0	233.485	.636	-.006	.238	-.969	-.232	-.587	-.775	-.161	.039	.851	-.417	-.087	12
1	3.443	.923	.124	-.215	-.364	.241	-.135	-.245	1.520	-.764	-.271	-.324	1.632	11
2	-25.863	1.757	-.542	.683	-.514	-.253	.707	.757	1.920	-.174	-.256	.675	2.182	10
3	1.952	-1.077	1.096	1.378	.894	-.795	.809	.261	-.801	1.631	1.548	.608	-2.871	9
4	-6.536	-.106	.547	-1.688	-1.109	-1.090	.748	.134	-1.678	-.466	.850	.142	.029	8
5	.207	.606	-.554	-.359	-.559	-2.559	.533	.352	.926	-1.148	-2.384	1.359	2.367	7
6	5.974	.859	1.018	3.115	.467	-1.037	1.214	.639	1.473	.878	-.052	2.786	.090	6
7	5.343	.305	.805	.681	-.698	.293	.730	1.034	-2.629	-1.432	2.377	-2.637	-3.581	5
8	-4.626	-.587	.518	-2.168	-.646	-.646	.407	1.378	2.438	-2.704	-.654	-2.567	1.589	4
9	-2.063	-.256	-.179	-.403	.782	-.358	-.799	-1.054	-.877	1.475	-.352	3.350	.431	3
10	1.613	-.399	-.002	1.207	1.262	.684	.099	-.929	-2.161	.146	-.378	4.724	-1.077	2
11	2.324	-.292	-1.040	-.356	.111	-.744	.355	-.440	-.105	.088	-.254	-.066	.317	1
12	1.242	-.123	-.313	-.658	.062	-.175	-.233	-.477	.404	.932	.164	-.036	.356	
n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	

S_n^m

October 1979



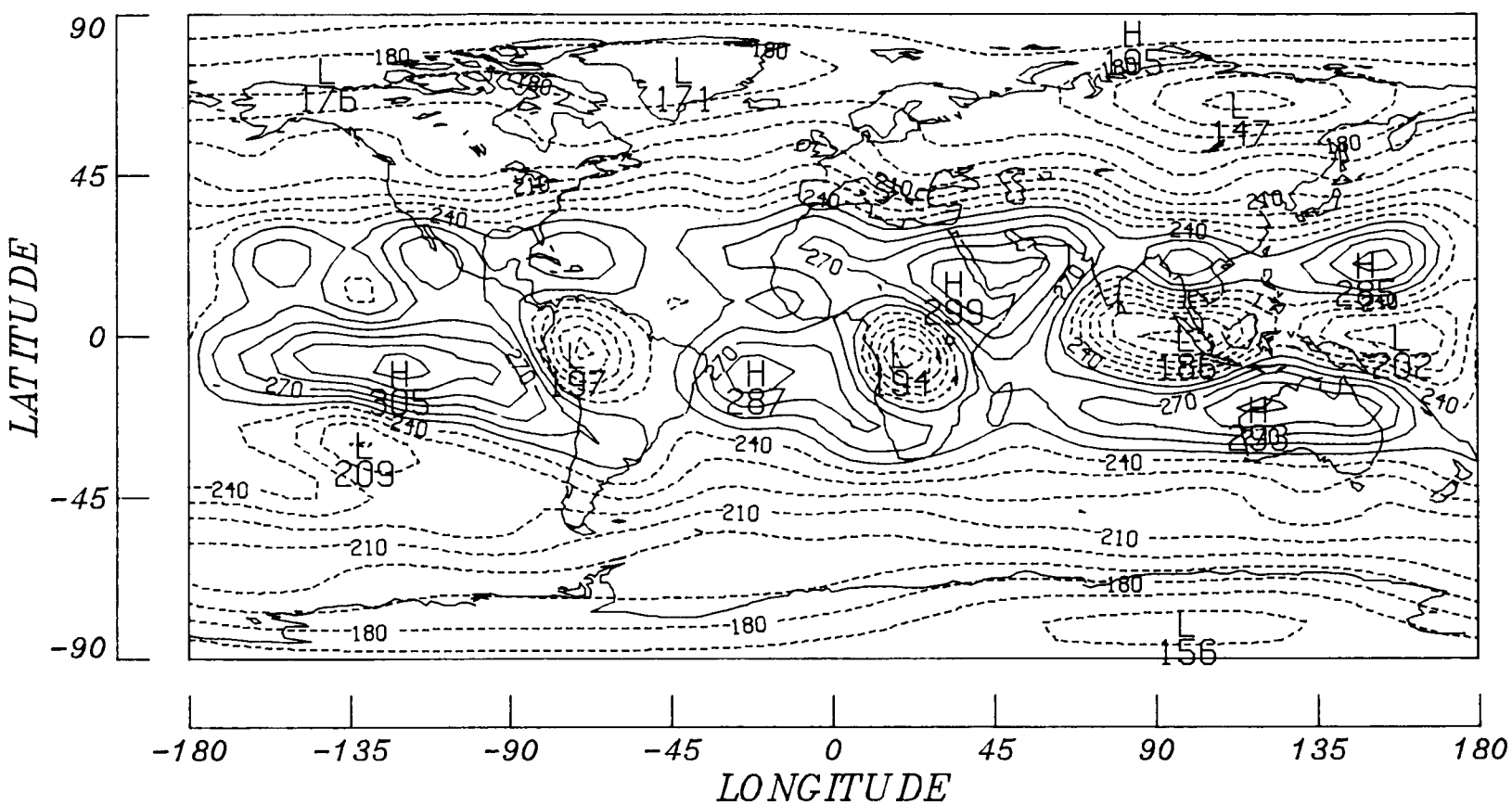
November 1979

C_n^m

		12	11	10	9	8	7	6	5	4	3	2	1	m/n
0	232.428	1.350	-.639	-.577	-.571	-.986	.275	-.036	-.286	.044	1.422	-.518	.039	12
1	-3.459	1.799	.493	-.849	.236	.048	.580	.216	.361	-1.201	-.247	-.928	1.288	11
2	-25.561	3.026	.662	.408	.648	.402	.597	.203	.930	-.118	-1.118	1.472	2.458	10
3	-.278	-.345	1.223	2.366	-.028	.388	-.329	-.276	-1.525	1.761	1.414	1.455	-2.586	9
4	-4.002	-.355	.487	-1.378	-2.548	.135	-.576	-.121	-1.190	-.991	1.668	-1.467	-.827	8
5	2.591	-.751	.216	-2.233	-1.276	-.207	-.566	-1.081	2.433	-2.253	-1.750	.746	3.159	7
6	6.295	.836	1.435	1.445	1.768	-.065	.336	.078	.746	1.186	-1.736	3.705	1.437	6
7	2.418	.835	1.009	.348	.442	1.492	-.150	2.337	-4.796	-.606	.584	-1.071	-4.420	5
8	-4.464	-1.272	-1.284	-1.540	-1.233	.456	-.032	1.237	.648	-2.540	.685	-2.413	-.043	4
9	-1.245	.428	-.833	.622	.348	-.490	.649	.062	-1.016	.796	1.016	2.354	.290	3
10	2.854	.982	1.720	.943	.936	-.270	1.462	-.300	-1.615	-.447	.034	3.775	-.948	2
11	1.685	-.800	-.692	-1.146	-.385	.202	.149	-.074	.541	.170	.107	.207	-2.233	1
12	-.154	-.824	-.336	-.420	.441	.114	-.675	-.192	1.266	.905	.286	.638	1.061	
n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	

S_n^m

November 1979



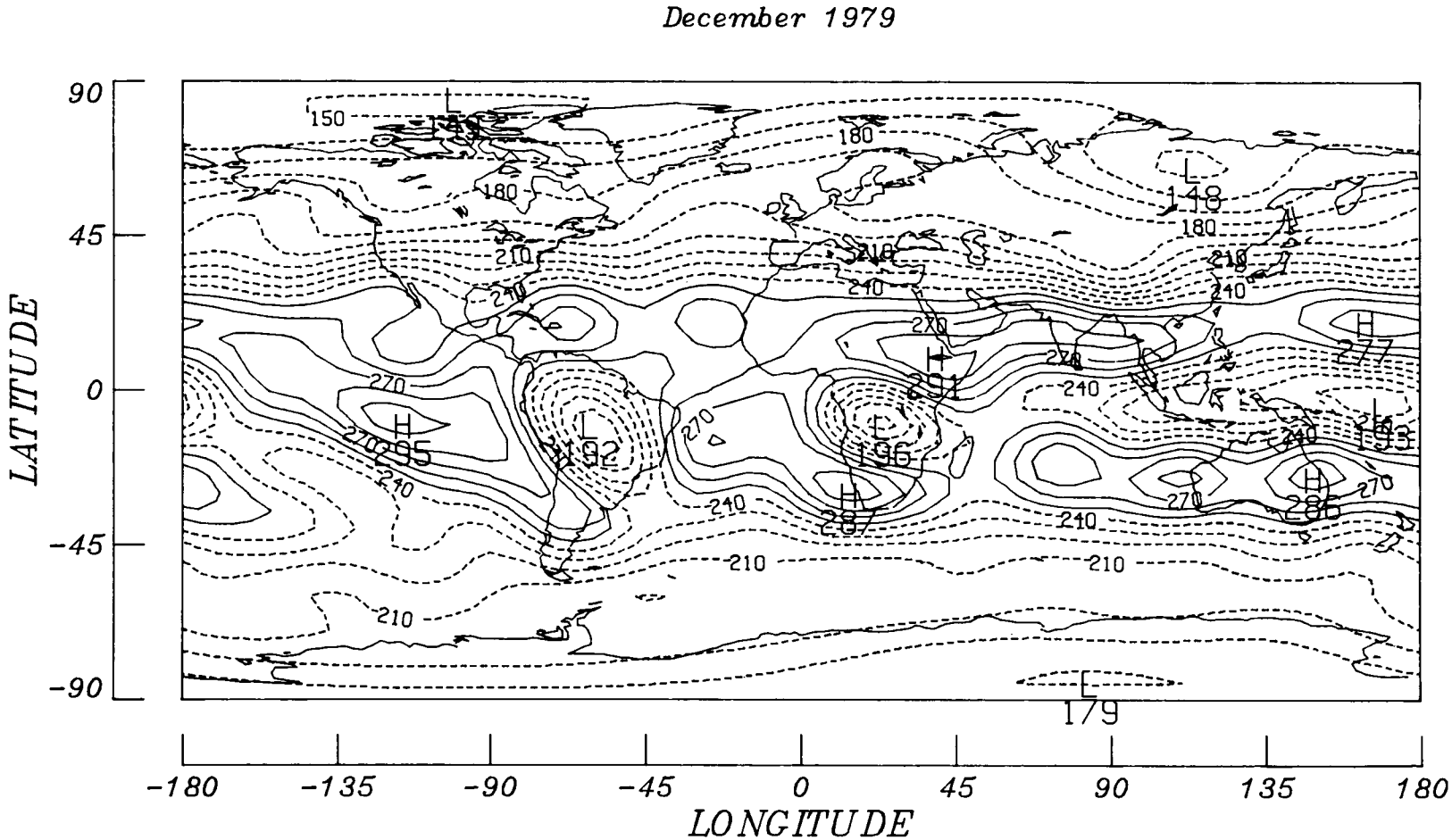
December 1979

C_n^m

		12	11	10	9	8	7	6	5	4	3	2	1	m/n
0	230.491	-.012	-.073	.500	-.465	-.167	.420	-.211	.078	.483	1.374	-.477	-.271	12
1	-8.634	1.935	.325	-.156	.331	.381	-.883	-.021	-.004	-1.404	.495	-.010	.915	11
2	-25.808	2.108	-.165	.555	.105	.795	.315	.297	.738	-1.201	-.595	1.033	2.955	10
3	-2.974	-.886	1.597	2.016	-.222	-.938	.090	-.029	-1.141	2.950	.661	.261	-2.315	9
4	-2.803	.920	2.408	-2.023	1.749	.856	-.307	.355	-1.837	.015	.193	-1.372	-1.816	8
5	3.884	1.710	.388	-1.643	-2.214	.208	.163	-.664	1.315	-3.721	-2.232	.711	3.287	7
6	6.311	.673	-.090	2.587	.461	-.231	-1.347	-.635	.877	1.809	.242	4.144	1.932	6
7	-3.421	-.334	.599	.549	.823	.388	.736	.060	-2.779	1.154	2.312	-.498	-3.099	5
8	-5.262	-.318	.490	-2.342	-1.284	-.285	.775	.140	.381	-2.506	-.750	-3.015	.290	4
9	1.669	.839	-.560	-.515	.661	-.248	.129	-1.257	-.118	1.203	-.495	.917	.178	3
10	.803	.574	.714	.609	1.666	-.158	-.013	-.209	-1.830	-.807	.236	3.296	-.447	2
11	.097	-.720	.238	.427	-.989	-.035	-.922	.729	.223	-.306	-.744	.081	-2.029	1
12	-.021	-.591	-.509	.379	-.456	.656	-.321	-.070	.508	.926	.970	.402	.136	
n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	

S_n^m

December 1979



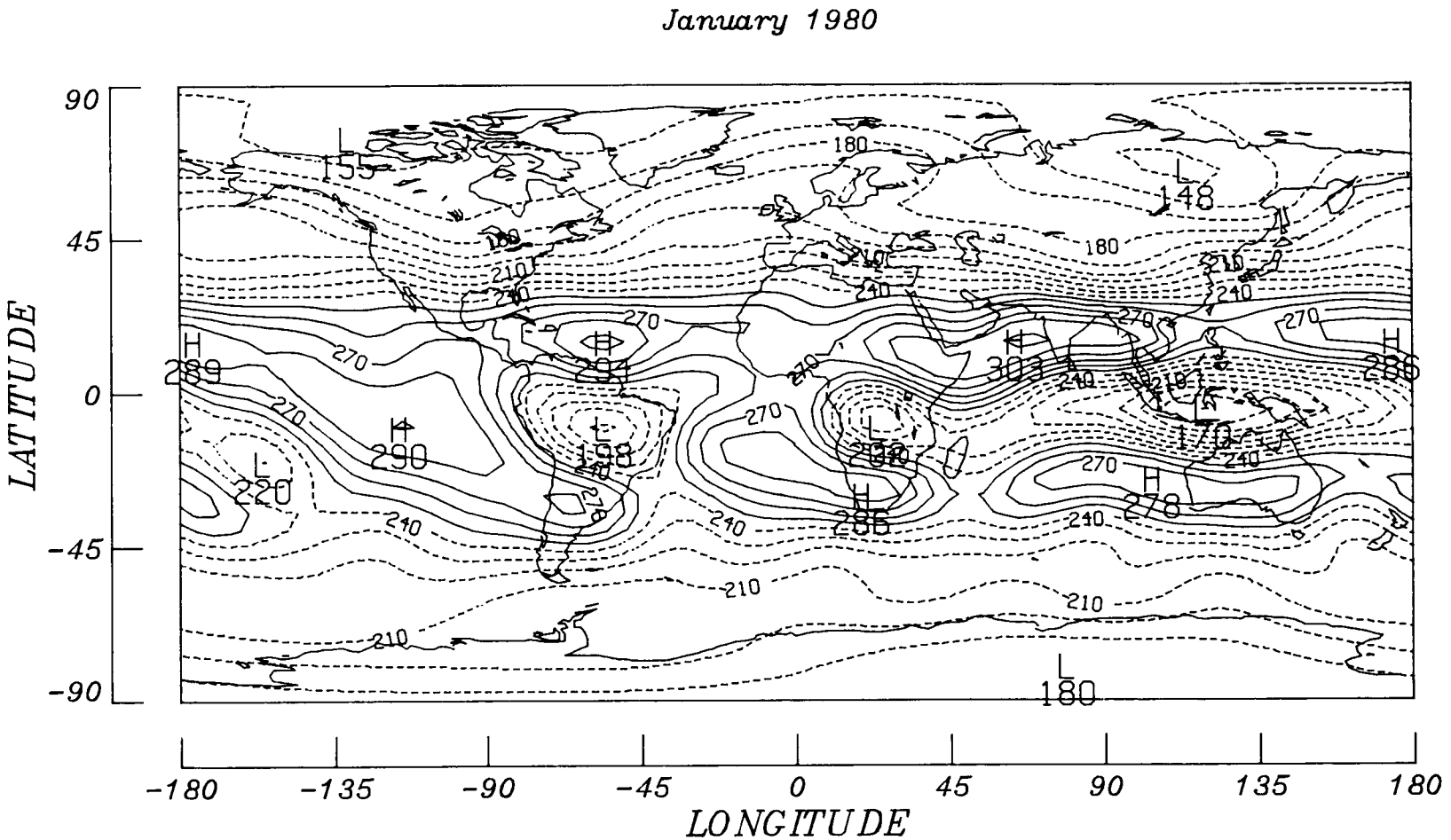
January 1980

C_n^m

		12	11	10	9	8	7	6	5	4	3	2	1	m/n
0	231.923	.527	-.192	-.346	.734	.092	.169	-.391	-.788	.492	1.154	-.797	-.787	12
1	-10.003	2.341	.038	-.509	-.688	.430	-.112	.520	1.058	-.854	1.104	-.077	.442	11
2	-26.437	.440	1.081	.344	.095	-.252	.647	-.061	.666	-1.098	-.149	1.296	2.493	10
3	-4.028	-.935	2.832	.485	-.253	-.482	-.178	-1.096	-1.291	2.294	.117	.576	-2.262	9
4	-3.079	1.435	1.733	-3.035	2.315	.043	.159	.389	-.337	-.299	.479	-2.240	-1.734	8
5	7.432	.330	1.890	-.424	-2.382	.328	-.731	.381	.674	-2.567	-1.661	-.630	2.940	7
6	7.200	.294	2.036	3.161	-.014	-.339	.237	-1.010	.665	2.204	-.413	4.347	2.960	6
7	-6.297	.406	-.284	-.583	1.377	.684	.150	.749	-.697	.440	1.014	.575	-3.635	5
8	-5.594	-.044	-.664	-2.517	-.829	.017	.515	.771	1.046	-2.813	-1.418	-4.186	-1.484	4
9	4.178	.294	.202	.071	-.022	-.185	-.202	-1.463	-.414	-.326	-.055	.291	2.108	3
10	1.675	.075	.816	.662	1.637	-.117	.551	-.385	-.977	-.071	.308	4.842	1.035	2
11	-.826	-.639	-.090	-.014	.322	-.244	.368	.951	.450	-.342	-.084	.303	-4.544	1
12	-.286	-.630	-.163	.366	-.629	.301	-1.135	-.079	.338	1.130	.356	.069	.229	
n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	

S_n^m

January 1980



February 1980

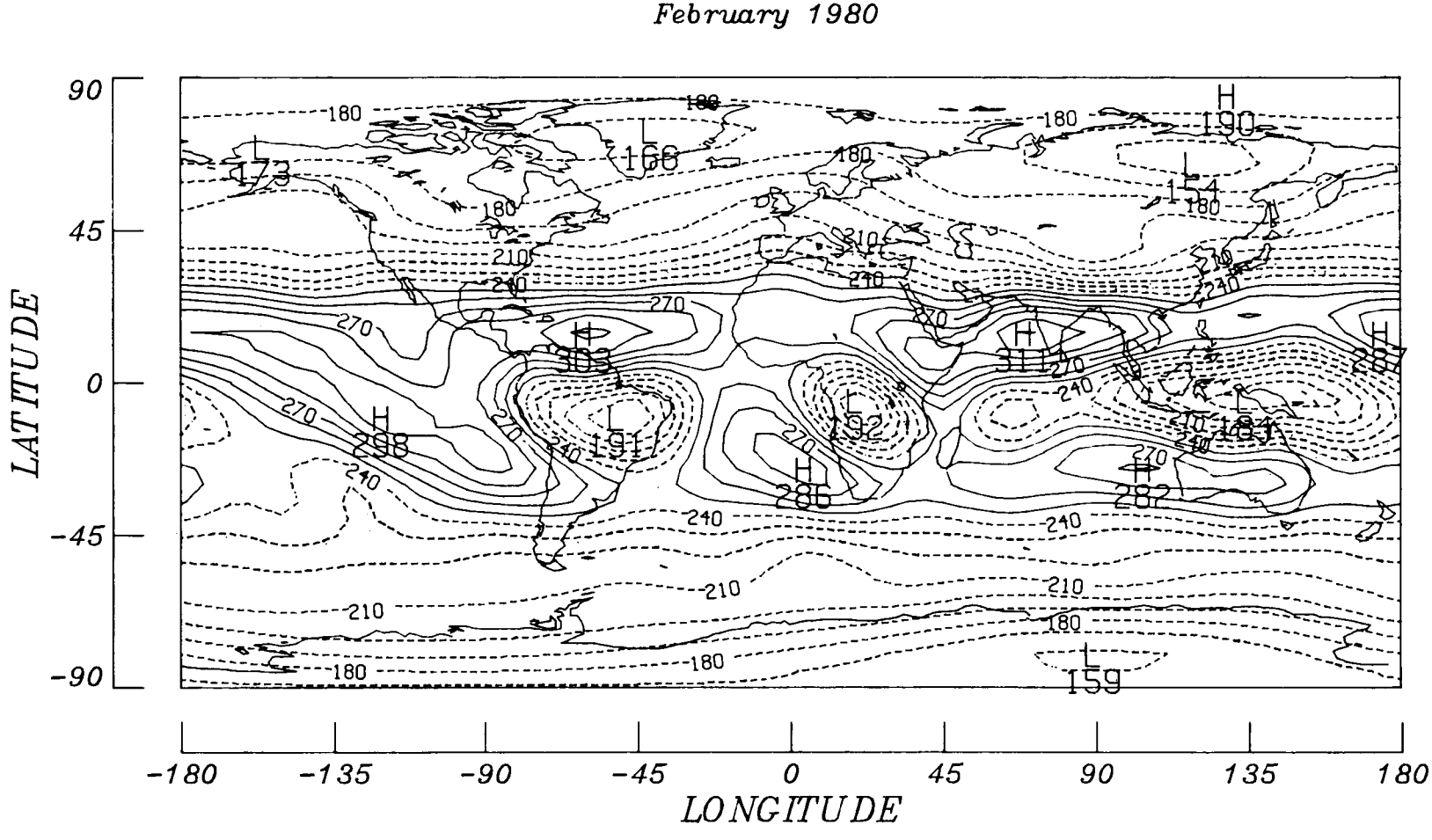
C_n^m

n/m	0	1	2	3	4	5	6	7	8	9	10	11	12
0	233.331	.255	-.170	-.509	-.280	-.563	.761	-.126	.133	-.155	.639	-.092	.051
1	-7.106	1.518	1.117	-.522	.155	.408	-.040	.416	.584	-1.177	1.079	-.512	.493
2	-26.315	.253	-2.087	.549	-.357	.652	-.826	-.629	.714	.126	-.201	.919	1.868
3	-2.548	-.637	3.113	.627	-.116	-.666	.589	-1.094	-.410	1.756	-.153	1.216	-1.624
4	-2.923	.498	3.371	-2.687	2.627	-.592	.694	1.022	-1.102	-.156	-.172	-2.010	-.939
5	9.050	-.342	.436	.316	-2.061	.221	-1.348	1.102	.644	-1.404	-2.223	-.936	1.365
6	6.309	.140	.030	3.915	.471	-.404	-.145	-1.439	1.679	.870	.441	4.805	2.427
7	-5.446	.248	-.493	-.392	1.484	.828	.110	.177	-2.942	.808	2.293	1.221	-3.795
8	-5.255	-.622	-.516	-2.702	-1.247	.067	.190	-.791	1.565	-1.775	-.950	-4.084	.148
9	4.846	.264	.298	.101	-.305	-.359	.147	-.149	-.457	.424	-1.610	.012	1.901
10	2.638	.563	1.038	1.038	1.218	.319	.130	.546	-.633	-.329	.261	5.565	-.397
11	-.082	-.644	-.634	-.246	.021	-.079	.205	-.058	.255	-.370	-.027	.192	-4.246
12	.004	-.532	-.530	-.407	-.186	.117	-.254	.016	.001	.633	.356	.863	.503

m/n	12	11	10	9	8	7	6	5	4	3	2	1
	12	11	10	9	8	7	6	5	4	3	2	1

S_n^m

February 1980



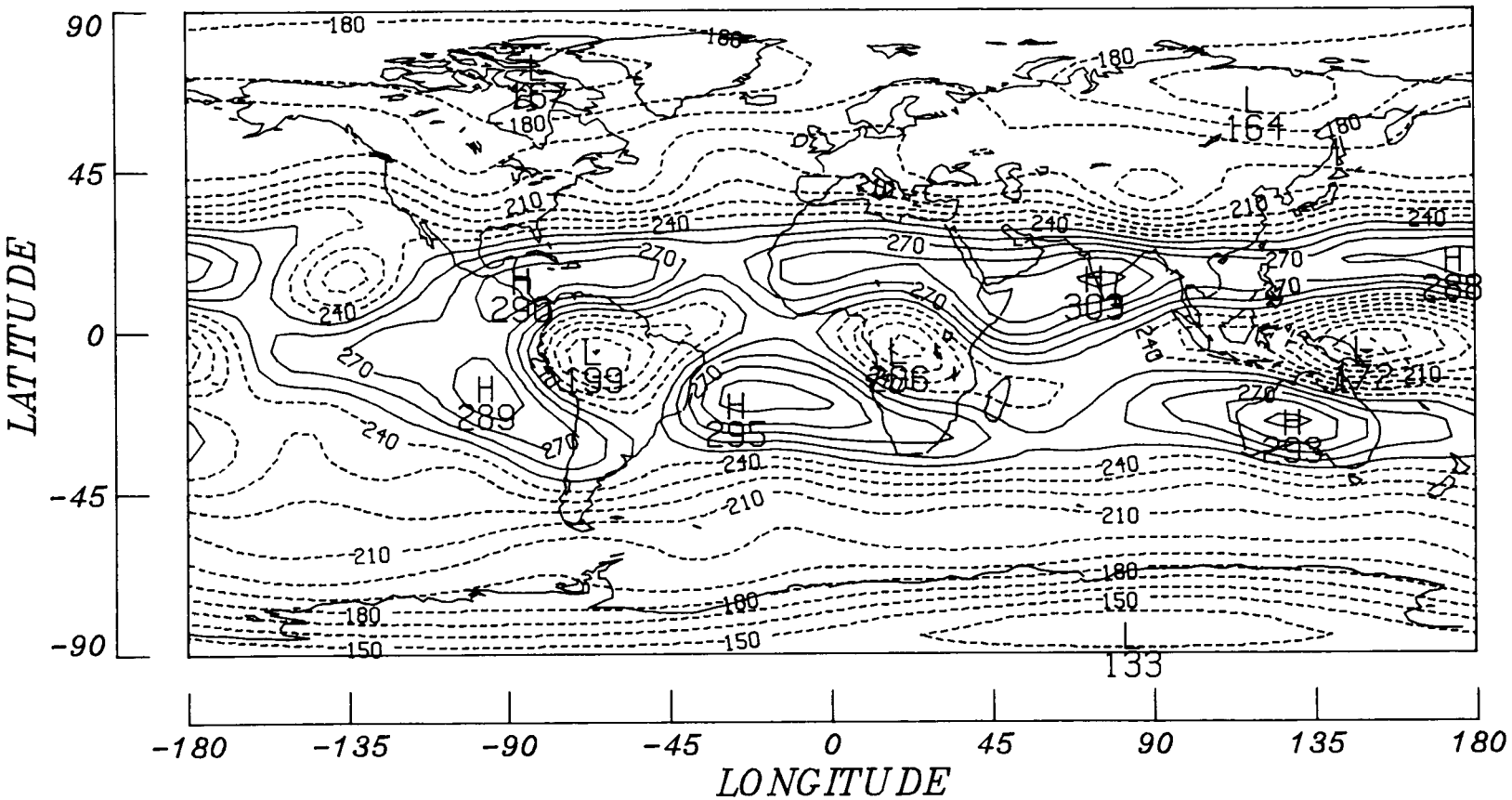
March 1980

C_n^m

		12	11	10	9	8	7	6	5	4	3	2	1	m/n
0	231.459	.044	.074	-.182	.097	.480	-.269	.507	.575	-.062	.832	-1.423	.480	12
1	-3.939	4.032	.635	-.159	.242	.352	.046	-.081	.564	-.161	.001	-.570	.332	11
2	-26.887	.587	-1.753	.047	-.517	.604	1.159	-.304	.156	.046	-1.179	2.738	2.142	10
3	.704	-2.389	1.848	1.668	-.225	-.135	.305	-.812	-.742	.848	.806	1.792	-1.927	9
4	-4.344	.901	3.688	-2.949	2.158	-.523	-.771	.090	-.759	-.521	2.424	-2.777	-1.419	8
5	6.651	.688	.578	-.800	-.310	-.579	.061	.452	1.825	-1.352	-2.736	-1.079	1.364	7
6	6.292	.319	-1.846	4.052	-.665	.723	.380	.030	.755	1.283	-2.342	4.736	3.315	6
7	-3.504	.360	-.798	.002	-.395	1.049	.943	.443	-4.243	.176	2.111	.166	-2.164	5
8	-6.998	-.631	1.905	-2.730	-1.149	-.355	-.108	.523	.731	-2.042	-.064	-2.607	-.267	4
9	3.210	-.415	.874	.128	.704	-.027	-.699	-1.227	-.430	.864	-.872	.863	-.571	3
10	2.675	.353	.388	.125	1.712	.162	.510	.339	-.414	-.226	-.537	1.920	.892	2
11	.559	.212	-.532	-.461	.098	-.718	.269	-.248	-.146	-.088	.102	-.100	-.783	1
12	-.196	.314	-.431	.632	-1.187	-.067	-.271	-.598	.081	.030	.517	-.737	.381	
n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	

S_n^m

March 1980



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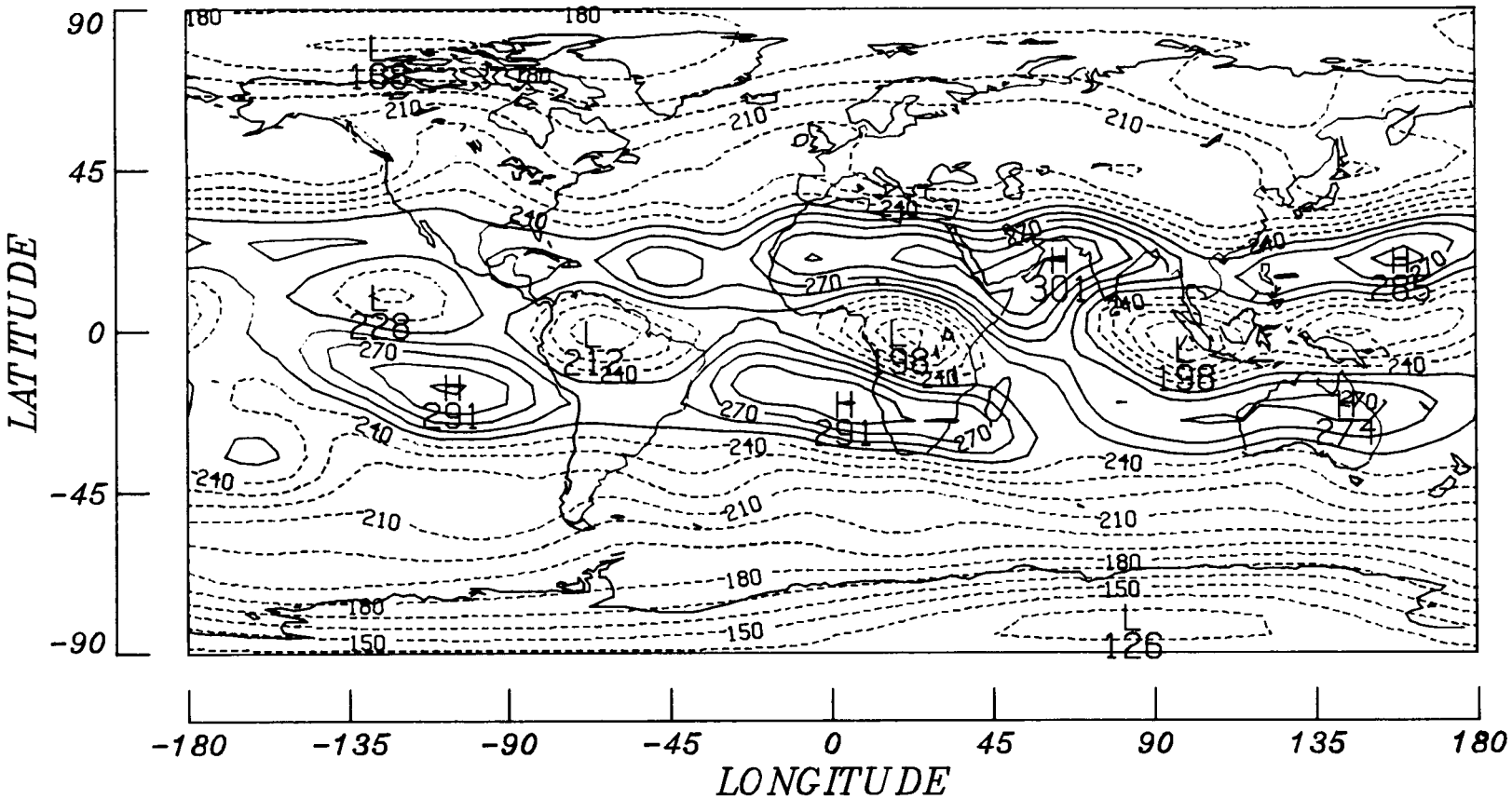
April 1980

C_n^m

		12	11	10	9	8	7	6	5	4	3	2	1	m/n
0	232.932	.326	-.708	-.514	-.172	.482	-.355	.373	.381	-.095	.874	-1.767	.537	12
1	2.023	3.168	-.110	-.858	-.227	-.519	.419	-.247	1.032	-1.480	-.664	-.837	.423	11
2	-24.834	2.788	.687	.385	-.515	-.404	.054	-.382	-.596	-.185	-.460	2.039	1.988	10
3	2.656	-.814	.354	.148	-.196	-.221	-.327	.237	-2.209	1.439	1.725	.859	-1.408	9
4	-6.109	.219	.526	-1.677	-.190	-.528	.713	.880	.174	-.942	.480	-.594	-1.253	8
5	2.492	-.852	-.610	-.352	-.401	.664	.937	-.056	1.897	-1.372	-1.688	-.430	1.096	7
6	5.613	.058	-.863	2.776	1.871	.784	.548	.163	-.382	.778	-.224	1.585	4.641	6
7	-.635	1.099	.328	-.201	1.619	-.625	.500	.785	-3.069	-.262	.732	-.028	-2.462	5
8	-8.116	-.805	1.039	-1.330	-.504	-.294	-.577	.486	.454	-3.707	-.506	.098	.052	4
9	-.379	-1.288	.679	.965	-.757	-.613	1.239	.320	-.056	.744	.345	1.841	-.070	3
10	3.458	1.057	.759	-.302	.834	-1.123	.517	-.955	-.324	.017	-.414	3.167	.034	2
11	1.386	.741	-1.112	-.882	.133	.217	-.392	.555	-.080	.192	-.530	-.128	-.503	1
12	-.473	-.045	-.258	.462	.075	1.024	-.562	1.061	.008	-.244	.071	.298	.008	
n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	

S_n^m

April 1980



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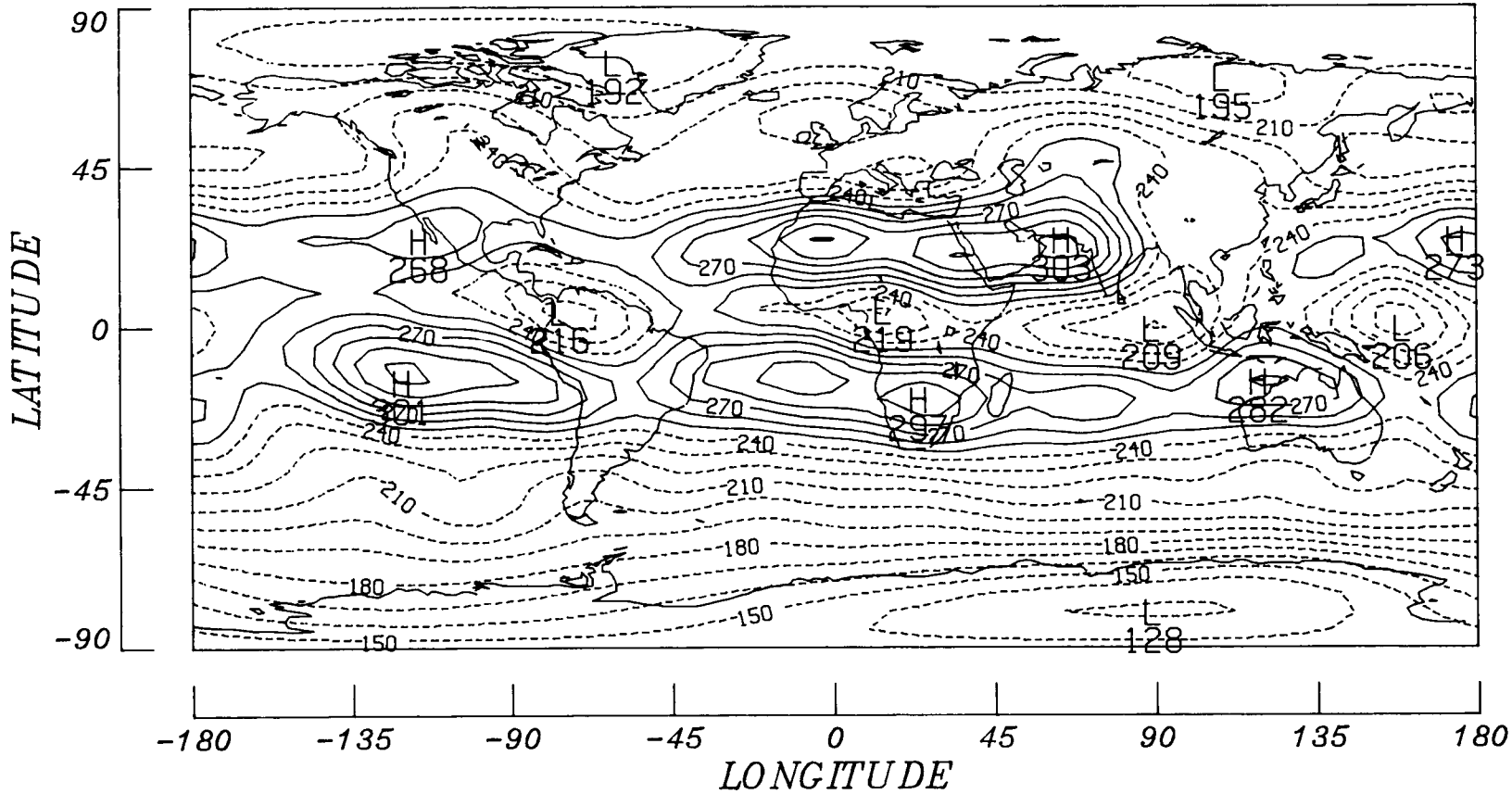
May 1980

C_n^m

		12	11	10	9	8	7	6	5	4	3	2	1	m/n
0	235.516	-.387	.145	-.505	0.000	-.029	-.082	.395	-.072	-.218	.379	-.331	.119	12
1	7.735	4.327	.099	-.157	-.023	-.069	.344	.240	.395	-.868	-.375	-.615	.923	11
2	-23.827	1.926	.796	-.265	.281	.185	.392	.185	.273	-.735	.292	.200	1.829	10
3	5.831	-.696	.333	2.431	-.691	-.629	.047	-.378	-.793	.343	1.349	.022	-1.250	9
4	-5.704	.759	-1.260	-1.787	-1.633	-.596	.463	.326	-.545	-.122	-.182	.826	-.808	8
5	-1.755	-2.217	-2.265	-2.174	-.576	-1.448	.245	.024	.241	-.492	-1.256	.030	.421	7
6	5.168	-.481	-.597	2.623	2.223	.796	1.373	.870	-.486	-1.356	.186	-.183	2.728	6
7	2.885	2.130	1.860	1.395	1.023	.349	.637	-1.376	-2.434	-1.506	1.259	-.467	-3.926	5
8	-6.815	-.264	1.961	-1.599	-.297	.269	.525	.578	.804	-1.735	-.836	.851	.407	4
9	-2.825	-1.767	1.082	-.205	-.021	-.597	.272	-.313	-.117	.376	.041	1.974	1.351	3
10	4.018	-.261	.746	1.206	.549	-.271	-.202	-.073	-.254	-.014	.841	4.291	.665	2
11	1.669	.395	-1.075	.052	.259	.466	.108	.961	-.227	-.150	.399	.036	-1.268	1
12	-.018	.900	-.635	-.115	.399	.245	.035	-.393	.187	.190	.794	.299	.134	
n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	

S_n^m

May 1980



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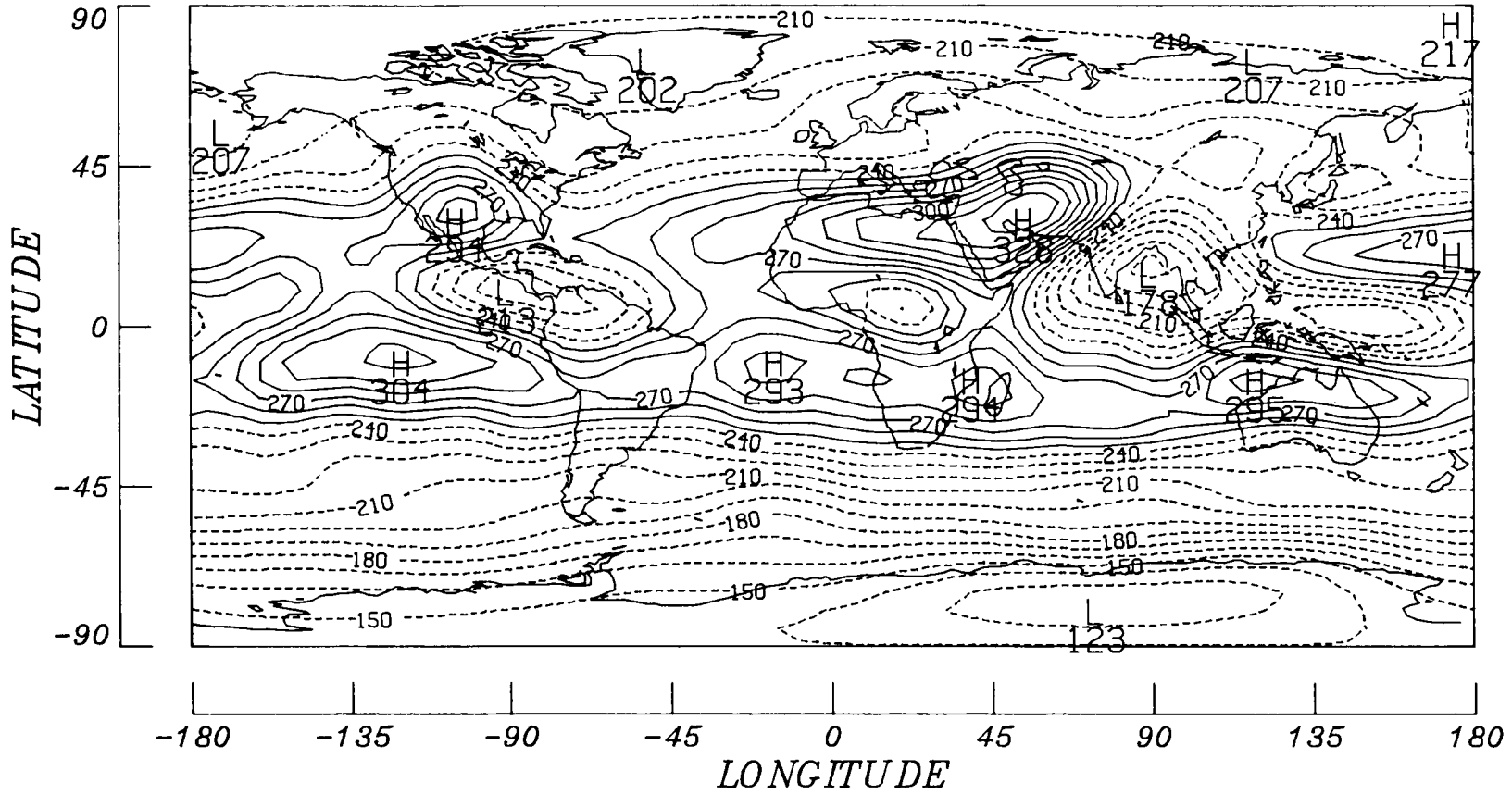
June 1980

C_n^m / S_n^m

		12	11	10	9	8	7	6	5	4	3	2	1	m/n
0	237.703	.053	-.621	-.121	-.114	-.270	-.395	-.235	-.215	-.301	-.525	-1.268	-.512	12
1	10.686	4.025	.443	.071	.043	-.516	.498	-.867	.617	.981	-.774	.292	.298	11
2	-25.476	3.376	4.695	.729	.186	.256	.681	.286	.678	.584	1.090	2.420	1.250	10
3	7.815	-1.211	2.160	1.947	.035	.343	.802	.856	-.308	-.106	2.228	1.027	-1.005	9
4	-6.836	.562	-2.315	-.936	-4.188	-.161	.410	.759	-1.107	-.289	-.128	-.950	-.535	8
5	-4.480	-2.121	-4.345	-1.737	-2.189	-1.496	.153	.087	-.673	-.612	-2.305	-1.346	.527	7
6	5.767	-1.333	-.666	1.872	.715	-1.464	1.219	-.827	-1.231	-1.064	-.790	.012	.310	6
7	6.971	.534	2.663	1.521	.779	.001	1.521	.325	-2.577	-1.630	2.212	-.648	-4.177	5
8	-4.270	.483	2.391	-.486	.154	-.025	.321	.128	.604	-1.515	1.695	.962	3.496	4
9	-4.431	1.481	.183	-.302	-.411	-.614	.315	.927	.274	.668	1.524	3.100	3.563	3
10	2.335	-.007	-.624	1.011	-.944	.023	.249	.864	-.987	-.408	-.016	6.520	-.304	2
11	.935	-1.920	-1.045	-.089	-.585	.112	-.385	.556	-.773	-.184	.251	-.521	-2.320	1
12	.544	-.368	.572	-.735	1.138	-.106	-.036	.164	-.079	-.357	-.106	.494	-.134	
n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	

June 1980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H 304
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H 294
H 295
H 277
L 178
L 123
210
240
270
300
180
150

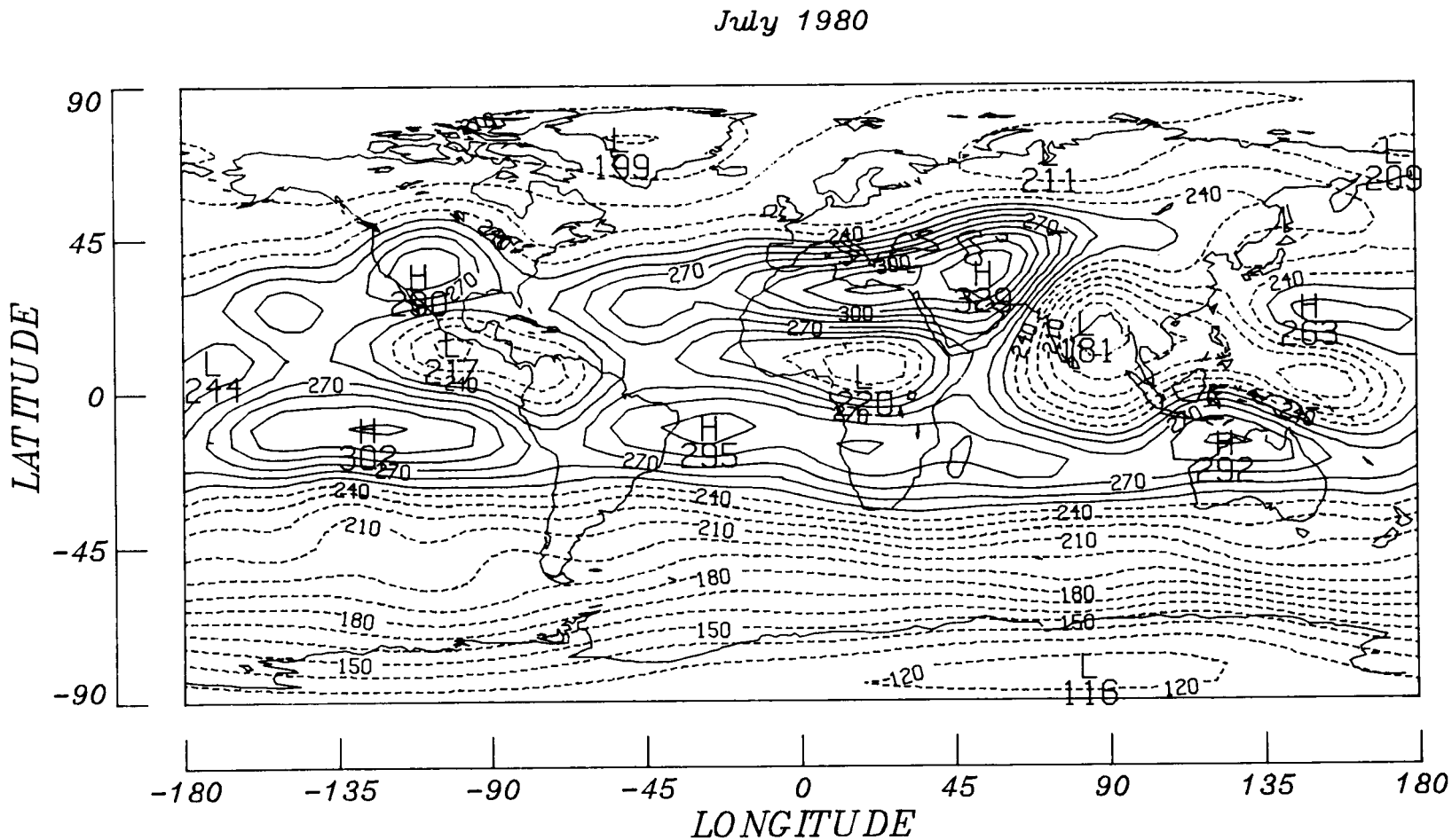
July 1980

C_n^m

		12	11	10	9	8	7	6	5	4	3	2	1	m/n
0	238.330	-.164	-.132	-.654	-.486	-.738	.042	.217	-.333	.559	-.294	.161	-.278	12
1	13.642	4.406	.505	-.460	.082	.052	-.203	-.650	.593	1.415	.250	.769	.399	11
2	-24.918	4.604	4.187	-.317	-.061	.485	.260	.116	.243	.123	.908	1.728	1.717	10
3	8.482	-1.162	2.357	.287	.082	.736	.134	1.009	-1.035	-.214	1.326	.235	-.248	9
4	-7.866	-.513	-2.133	-1.730	-4.941	.130	.546	.406	-1.113	-.770	-.372	-.794	-1.028	8
5	-6.331	-3.293	-3.748	-.980	-2.383	-1.233	1.082	-1.017	.321	-.736	-1.769	-2.057	.115	7
6	4.606	-1.445	-1.527	2.611	.841	-.018	1.755	-.072	-.428	-1.210	-.524	-.684	.625	6
7	8.505	1.177	1.650	.888	.743	.312	1.165	1.169	-2.815	-1.345	3.168	.080	-3.941	5
8	-2.707	1.467	2.000	-1.523	.004	-.768	-.103	1.272	.504	-.472	.905	1.278	4.553	4
9	-3.256	1.645	1.475	-.370	.571	-.948	.313	.845	.326	-.309	.373	2.935	4.259	3
10	1.023	-.166	.139	1.674	-.132	.013	.782	.467	-1.024	-.333	-.237	5.087	-.934	2
11	.810	-1.584	-1.272	.872	-1.178	.811	.031	.391	-.686	-.402	-.017	-.363	-2.915	1
12	.423	-.115	-.372	-.251	.523	.252	-.410	.010	-.112	-.185	.153	-.077	.178	
n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	

S_n^m

July 1980



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L 211
L 209
H 290
L 217
L 244
H 302
H 295
L 220
H 329
L 181
H 263
H 292
L 116
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150
120
300

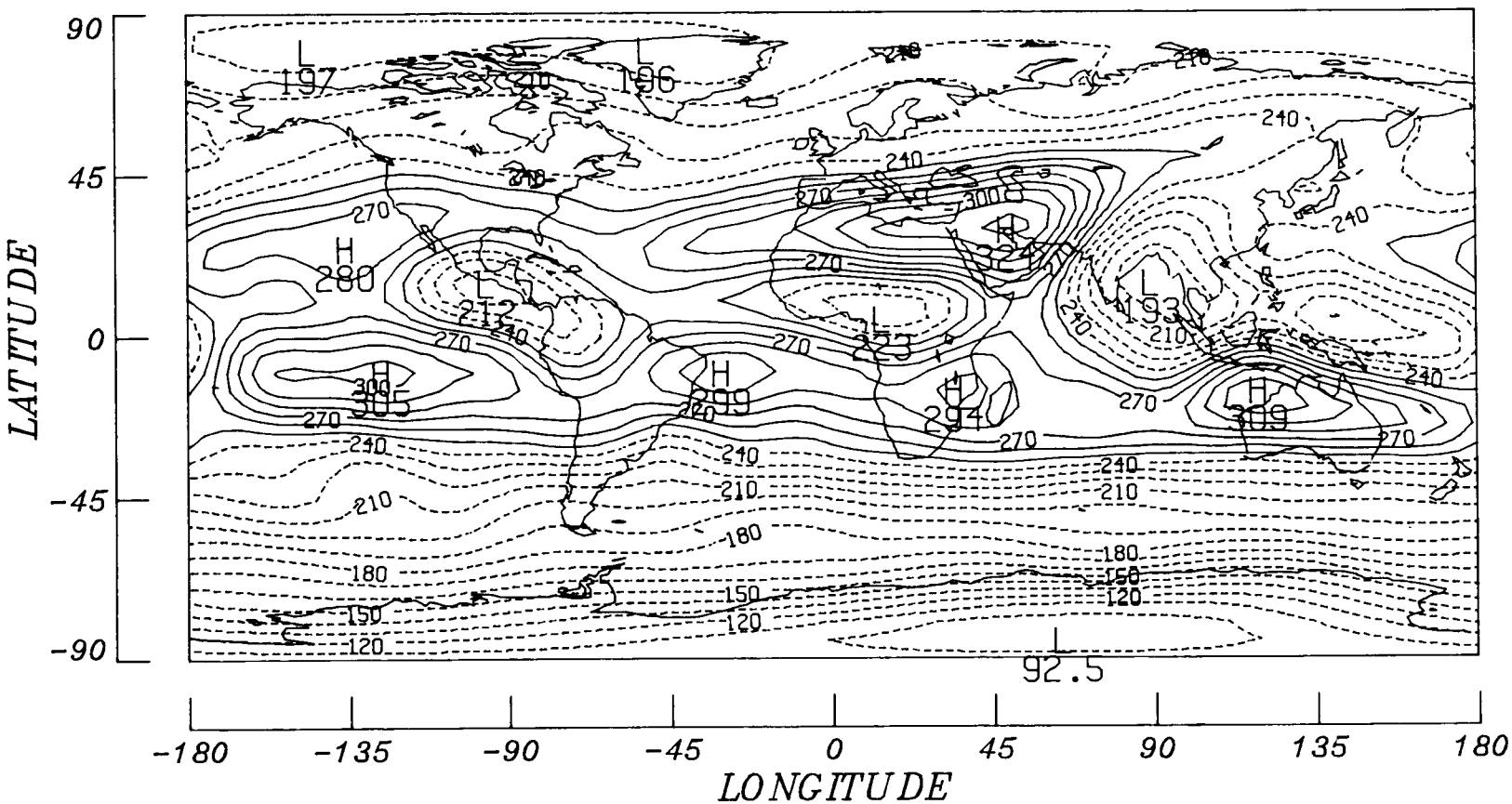
August 1980

C_n^m

		12	11	10	9	8	7	6	5	4	3	2	1	m/n
0	238.699	.045	-.686	-.069	-.480	-.309	-.478	-.283	-.653	-.585	.725	-.249	.056	12
1	12.593	3.712	.112	-.068	.405	.042	-.138	-.792	.871	1.085	.583	.161	.295	11
2	-26.127	4.196	3.042	.587	-.010	.556	.382	.530	.854	.787	.379	1.895	1.936	10
3	9.779	-1.294	2.719	.335	-.368	.952	.248	.414	-.218	.030	1.235	1.041	-1.110	9
4	-9.468	-.857	-1.076	-2.163	-5.660	.067	.336	-.467	-.613	-.556	.338	-1.664	-.545	8
5	-5.759	-2.165	-3.655	-.527	-1.978	-1.097	.768	-.677	.322	-.082	-2.324	-1.805	.847	7
6	4.189	-1.384	-1.433	2.841	.685	.094	1.670	-.385	-.321	-.270	.280	-.133	.690	6
7	7.031	.232	.962	.774	.202	.765	1.679	.429	-2.975	-.564	2.992	-1.532	-3.954	5
8	-4.778	1.826	1.461	-1.699	.311	.323	.124	.067	-.402	-.035	.311	-.023	3.969	4
9	-2.701	1.327	.785	.229	.726	-.204	-.350	-.212	.342	.769	-.620	3.391	3.370	3
10	.323	-.294	.334	1.489	-.594	.333	-.185	.010	-.622	-.448	-.520	5.947	-.823	2
11	1.093	-1.478	-1.342	.002	-.579	.130	.163	.580	-.365	-.231	-.409	.026	-2.654	1
12	.737	.928	.045	-.461	.619	-.384	.129	-.176	-.141	.468	.186	-.170	.192	
n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	

S_n^m

August 1980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LONGITUDE

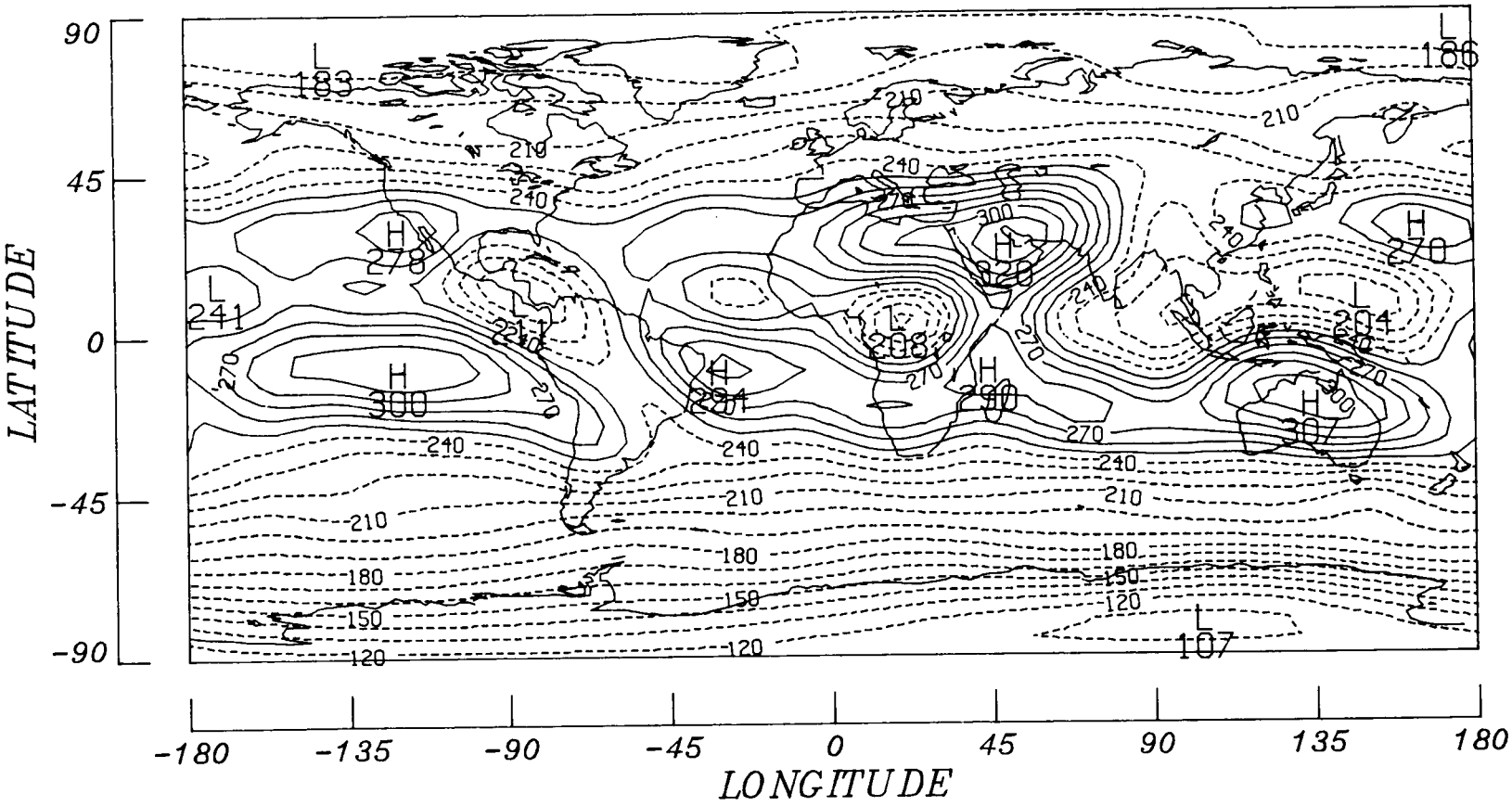
September 1980

C_n^m

		12	11	10	9	8	7	6	5	4	3	2	1	m/n
0	236.836	-.261	-.046	-.159	-.241	-.270	-.344	-.137	-.169	-.668	.504	.635	.015	12
1	8.033	1.734	.469	-.240	.259	.397	.051	.009	.376	.189	.328	-.295	.433	11
2	-27.616	4.247	2.221	.257	.283	.593	.864	-.110	1.321	.141	.692	-.082	1.418	10
3	7.231	-.459	1.823	.353	.808	-.441	.836	.353	-.780	.942	1.259	.845	-2.231	9
4	-8.780	-1.653	-.345	-2.258	-4.567	-.331	.413	.151	-1.411	-.488	-.711	.179	.129	8
5	-4.121	-1.460	-1.482	-.913	-1.683	-.896	.179	-.424	1.587	-.833	-2.392	-.569	2.062	7
6	4.155	.647	.288	2.869	.981	-.835	2.028	-.042	.732	.382	.739	.497	.550	6
7	6.613	.785	.665	.882	-.143	1.359	1.734	.911	-2.907	-.592	1.712	-2.210	-3.953	5
8	-3.681	-.375	.768	-1.898	-.109	.371	-.251	1.136	.657	-1.749	-.556	-.740	2.776	4
9	-3.261	-.508	.543	-.310	.921	-1.056	-.895	-.632	.232	.749	-.077	4.676	2.237	3
10	-.424	-.010	.302	.371	.610	.779	.157	-.461	-1.858	.146	.437	4.942	.167	2
11	1.175	.926	-1.104	-.831	-.486	.589	-.083	.203	-.567	-.061	-.289	-.419	.026	1
12	1.155	.541	-.358	-.075	-.167	-.456	-.217	.512	.719	.625	-.259	-.529	.003	
n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	

S_n^m

September 1980



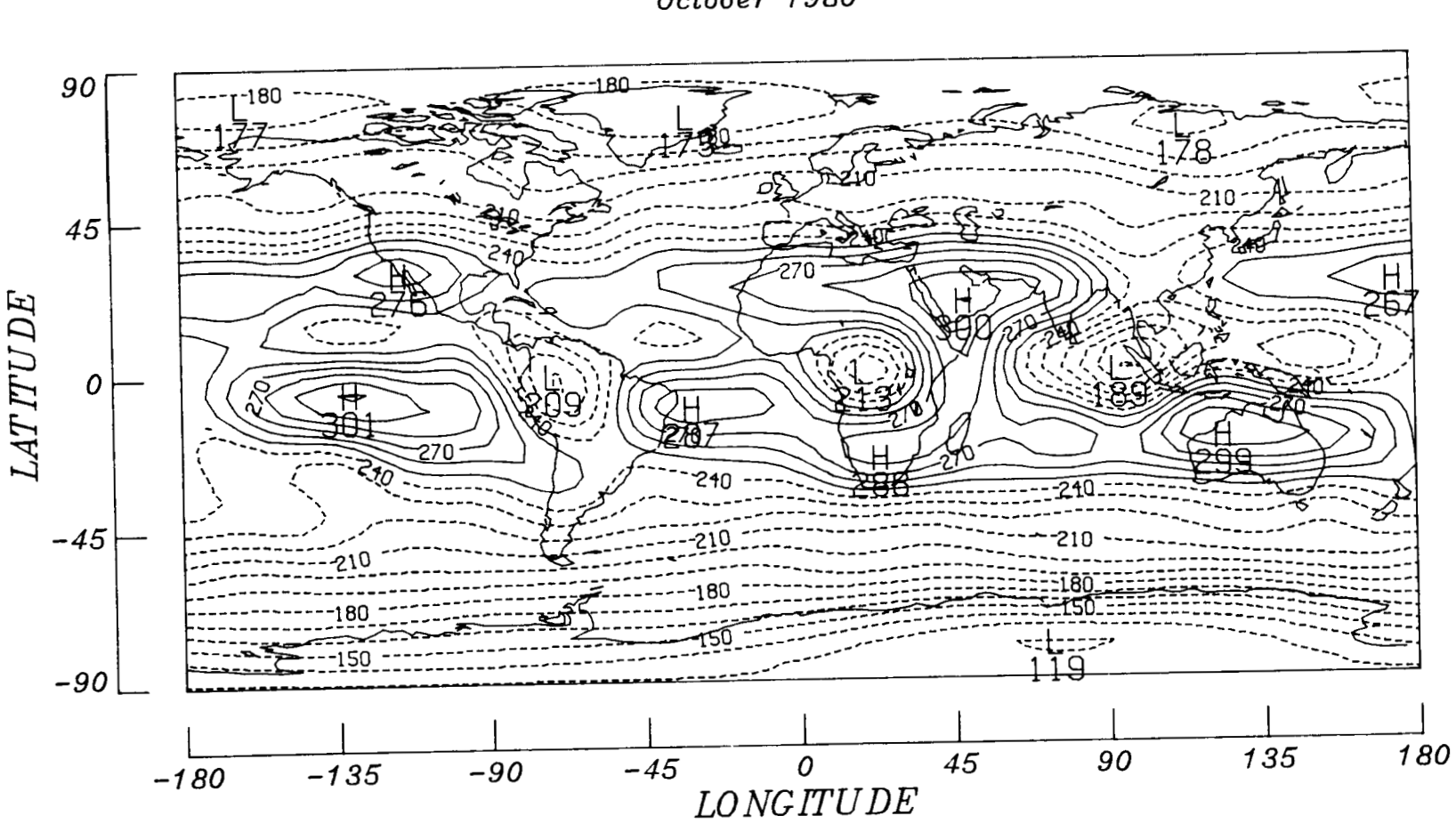
October 1980

C_n^m

		12	11	10	9	8	7	6	5	4	3	2	1	m/n
0	234.365	-.385	-.059	-.234	-.468	-.027	-.616	.156	-.502	-.467	1.263	-.675	.018	12
1	3.203	2.019	.411	.242	.320	.031	.152	-.026	.893	-.509	-.186	-.314	1.147	11
2	-27.484	2.355	2.094	.577	.147	.193	.657	-.309	.408	.082	-.915	1.211	1.791	10
3	4.213	-1.506	1.318	.677	.169	.056	-.293	.249	-1.071	1.065	1.524	.665	-3.398	9
4	-8.317	-.395	-.540	-2.066	-3.232	-1.120	-1.016	.652	-.296	-.724	.680	-.614	-.521	8
5	-.419	-.851	-1.051	-.964	-.071	-1.067	.476	.222	1.683	-1.508	-2.112	.490	2.787	7
6	4.771	.719	.483	3.004	1.505	.255	1.155	.327	-.178	.989	.227	1.488	1.043	6
7	4.289	.898	.309	.399	-.648	.395	1.039	.887	-3.685	-.833	1.336	-1.155	-3.724	5
8	-4.650	-.989	-.184	-2.087	-.881	-.996	-.177	.352	1.051	-3.497	-.917	-1.854	1.519	4
9	-2.778	-.836	-.050	-.188	.848	-.554	-.381	-1.089	.147	1.001	1.412	3.532	.893	3
10	1.230	.625	.473	.645	.832	.091	.464	-.013	-1.159	-.337	-.220	4.761	-.658	2
11	1.599	.139	-1.036	-.130	-.521	.461	-.037	.311	.309	-.084	-.058	-.306	-.109	1
12	.945	.063	-.243	.044	-.080	.253	-.402	.216	.706	.761	.381	.274	-.103	
n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	

S_n^m

October 1980



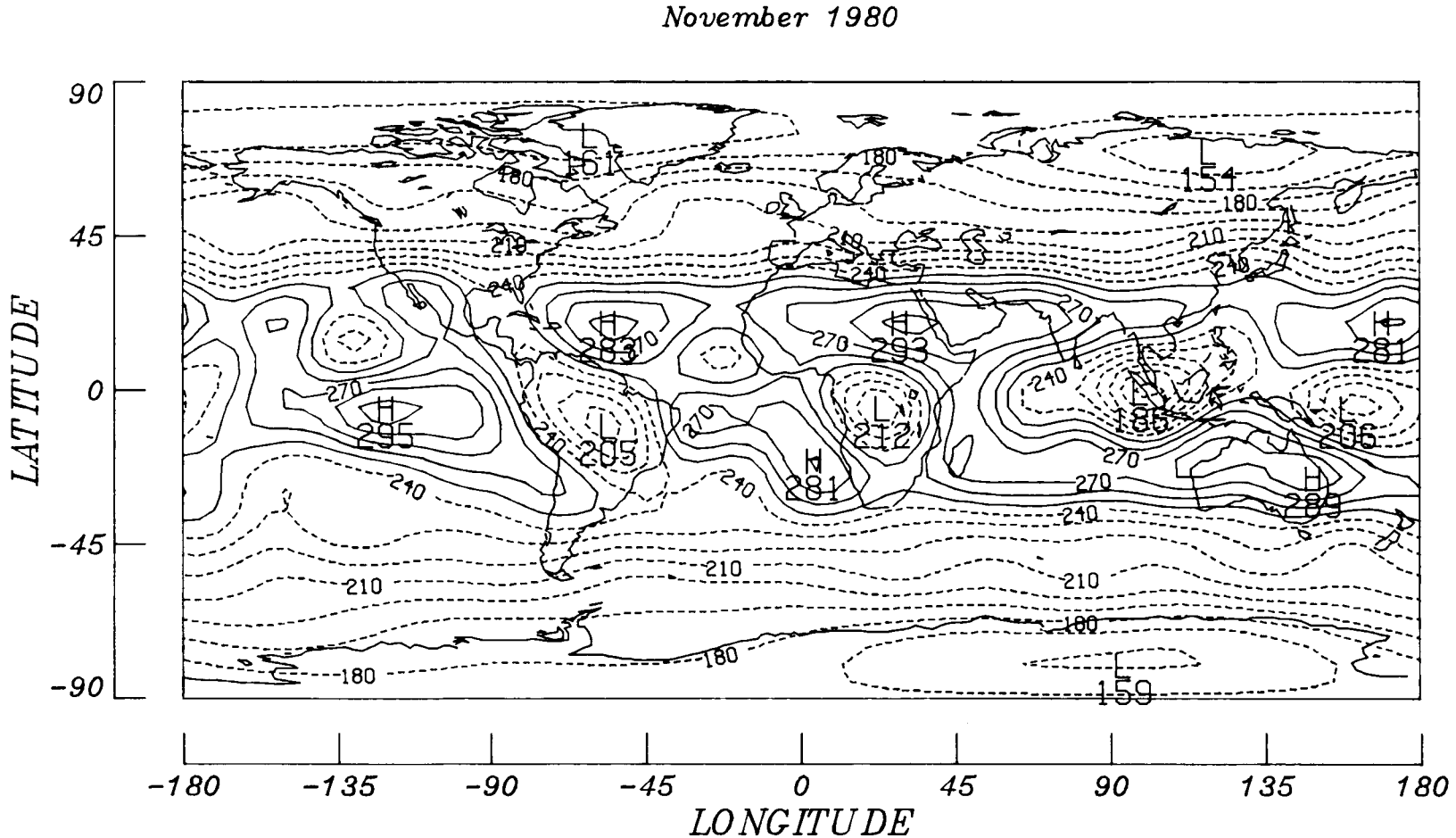
November 1980

C_n^m

		12	11	10	9	8	7	6	5	4	3	2	1	m/n
0	232.950	-.808	.280	-.156	.461	-.073	.360	.121	-.547	-.298	1.489	-.347	-.383	12
1	-3.511	1.153	.446	-1.408	.121	.139	-.108	.100	.398	-.509	-.146	-.436	1.291	11
2	-27.120	2.201	.580	.514	-.015	.466	.135	.258	1.103	.389	-1.144	.753	2.259	10
3	-1.262	-.892	1.391	1.011	1.013	-1.620	.259	-.419	-1.694	.843	.224	1.167	-2.797	9
4	-5.719	-.080	.861	-2.099	-1.283	-.387	-.188	-.300	-2.134	-.800	.638	-.345	-.070	8
5	2.565	.115	-.618	-.882	-1.171	.602	-.263	.473	1.896	-1.133	-1.197	-.123	3.068	7
6	6.303	1.326	1.291	2.989	1.288	-.818	.650	1.449	1.878	1.429	-.655	2.405	.274	6
7	.370	.579	1.421	1.095	.211	.166	-.038	1.200	-2.976	.432	.595	-.315	-3.961	5
8	-4.365	-.526	.038	-2.519	-1.000	-.081	.923	.993	1.371	-2.921	-.543	-2.254	.658	4
9	-.872	-.413	-.865	-1.290	.404	-.146	.140	-.333	-.881	1.158	1.863	1.075	.214	3
10	1.983	-.377	.274	1.365	1.153	.290	.099	-.781	-.633	-.981	.735	2.912	-.639	2
11	1.292	-.034	-.528	.229	-.283	-.148	-.290	-.822	.449	-.456	.306	-.363	-.079	1
12	1.187	.043	-.018	-.132	-.299	-.472	-.709	.941	.921	.591	1.059	-.248	.479	
n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	

S_n^m

November 1980



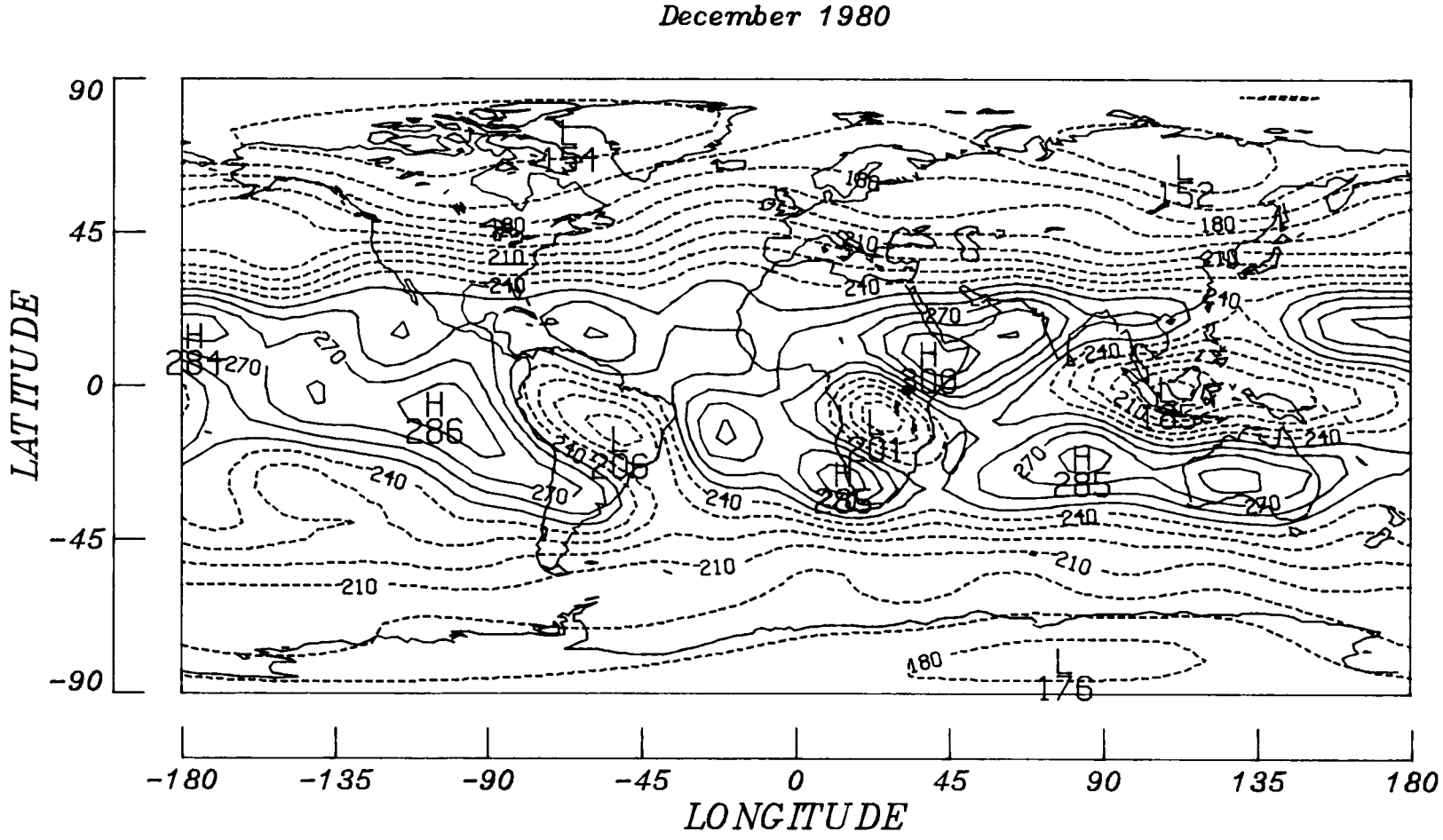
December 1980

C_n^m

		12	11	10	9	8	7	6	5	4	3	2	1	m/n
0	230.317	.781	-.066	.353	.597	-.126	.216	-.664	-.366	.207	1.330	-.049	-.007	12
1	-8.351	1.266	.378	-.405	-.289	.156	-.392	.340	.346	-.894	1.010	-.265	.507	11
2	-26.722	1.734	.721	1.156	-1.121	.515	-.095	.438	.732	-.131	-1.106	.522	1.686	10
3	-2.406	-.713	2.716	-.861	.390	-.399	-.160	-.431	-.755	1.943	.143	.183	-2.049	9
4	-3.389	.797	.689	-2.396	1.695	-.163	.187	.194	-1.303	-.848	1.262	-1.671	-1.320	8
5	3.680	.034	.043	.341	-1.745	.889	.110	-.506	1.042	-2.249	-1.868	.440	3.088	7
6	6.388	.137	2.298	2.679	.676	-1.524	.052	-.359	1.305	1.235	-1.606	3.887	1.449	6
7	-2.324	-.073	.903	-.624	1.647	.532	.517	.390	-2.214	-.268	.987	-.544	-3.525	5
8	-3.492	-.820	-.772	-2.354	-1.247	.305	.799	.821	.850	-3.011	-.978	-4.078	1.344	4
9	1.728	.949	-.849	-.808	-.501	-.423	-.305	-1.242	-.190	-.115	.405	1.855	1.805	3
10	1.488	1.170	.299	.460	1.587	.523	-.181	-.634	-1.331	-.051	-.283	4.946	-.314	2
11	.307	-1.508	.057	.192	.070	.144	.353	.557	.250	-.847	.732	.397	-1.963	1
12	.070	-.654	.398	.536	-.733	-.018	-.743	.119	.352	.625	-.370	.497	.023	
n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	

S_n^m

December 1980



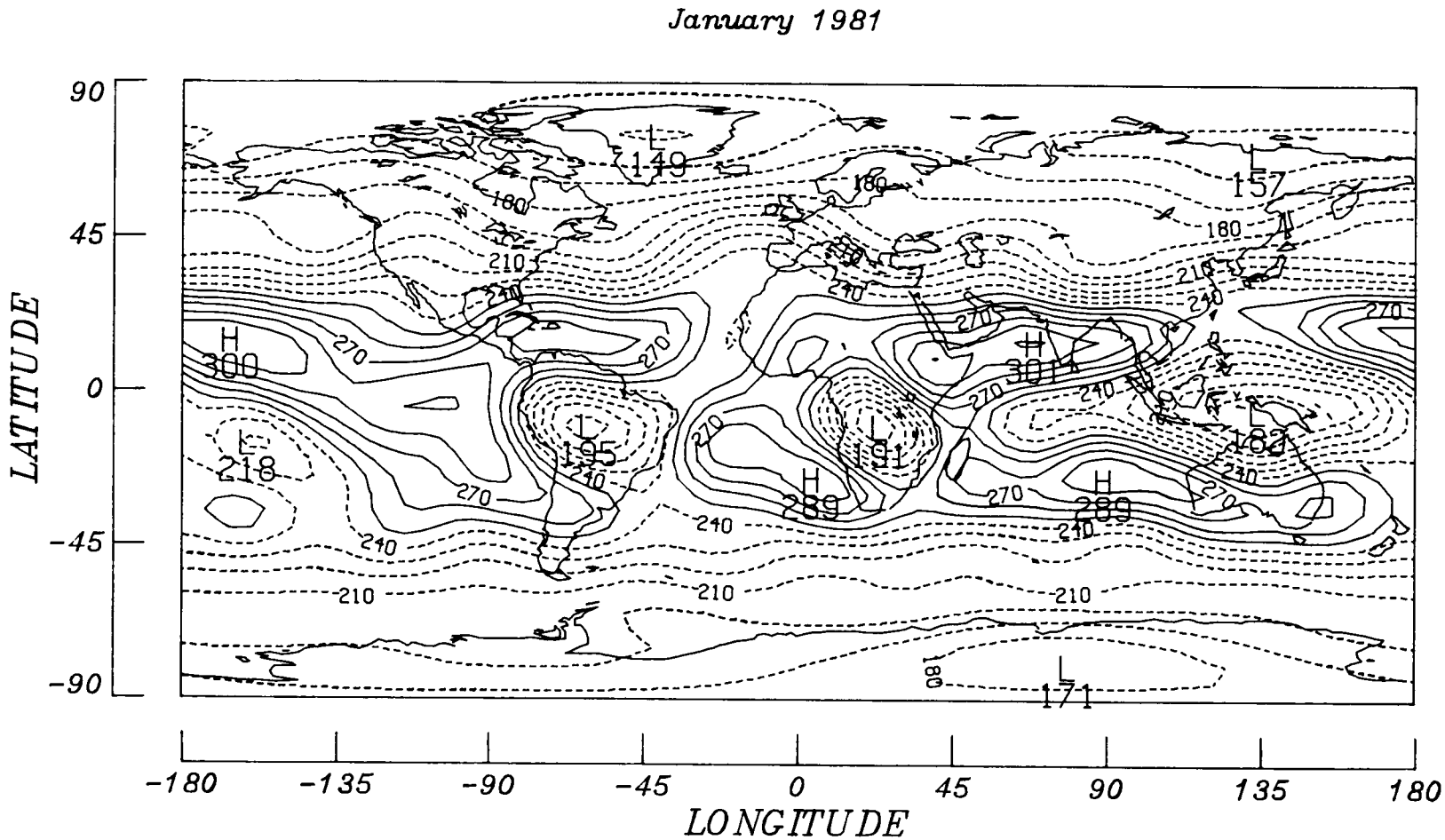
January 1981

C_n^m

n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	m/n
0	232.105	.555	-.245	.204	.145	-.560	.022	-.522	.336	.713	.021	-.488	-.040	12
1	-9.098	2.087	.424	-.994	.577	.408	-.895	.508	.985	-.539	1.213	.554	.062	11
2	-26.098	-.060	-.695	.511	-.210	1.289	.035	.464	.823	-.071	-.215	.699	1.847	10
3	-3.203	-1.679	2.804	-.697	-.013	-.352	.546	-1.392	-.996	2.085	-.242	.227	-2.198	9
4	-4.447	1.519	2.133	-3.328	3.325	.403	.188	.286	-2.007	-.866	.657	-1.099	-.964	8
5	6.545	.214	-.733	1.210	-1.855	-.532	-.826	1.009	.387	-3.821	-1.335	.466	2.975	7
6	5.745	-1.718	.176	4.066	.289	.672	.071	-1.703	.841	.172	-.756	4.410	1.717	6
7	-6.185	-.114	-.432	.282	1.724	1.148	.176	1.424	-2.325	1.759	2.106	.879	-3.785	5
8	-3.245	.185	-.838	-2.295	-.856	-.948	.831	-.298	2.061	-3.286	-.550	-4.687	-.088	4
9	3.725	.016	.180	-.923	.341	-.428	.073	-.488	-.898	1.016	-1.634	.758	1.582	3
10	1.358	1.160	.510	.890	1.521	.453	.376	.041	-1.369	-.004	.804	5.947	-.166	2
11	-.260	-.356	-.632	.976	-.678	-.131	.020	.196	.790	.886	.579	-.020	-3.398	1
12	.142	-.874	.259	.217	-.739	-.238	-.375	.690	-.449	-.280	-.892	.889	.459	
n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	

S_n^m

January 1981



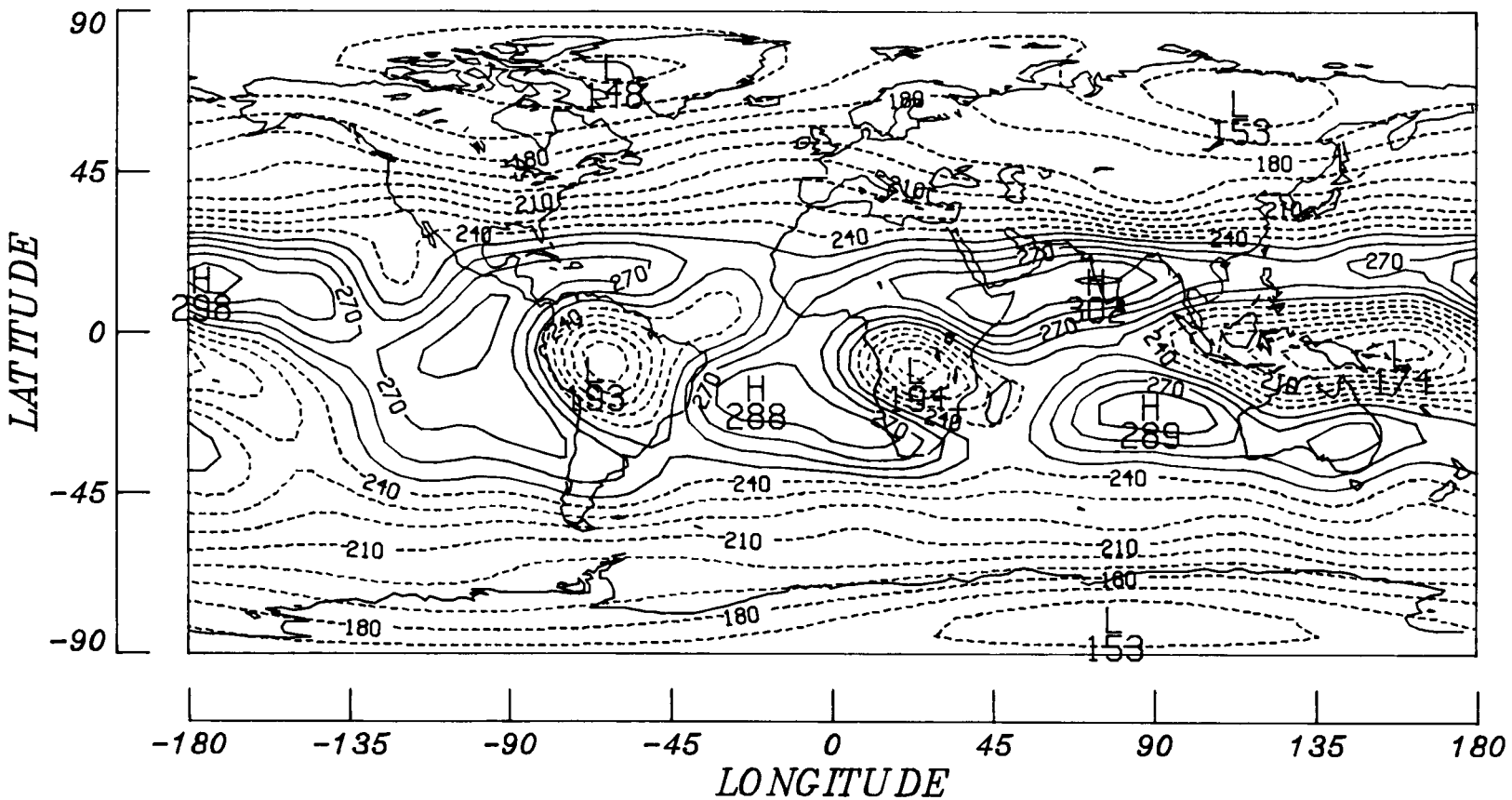
February 1981

C_n^m

		12	11	10	9	8	7	6	5	4	3	2	1	m/n
0	231.054	.393	-.438	-.091	.134	-.246	.429	-.024	-.294	-.099	.781	-.779	-.070	12
1	-9.706	3.683	-.128	.301	-.081	.265	-.707	.279	.537	-.527	1.303	.282	.584	11
2	-27.016	-.087	-1.734	.333	-.228	.929	.481	.109	.513	-.443	-.918	1.617	3.140	10
3	-1.411	-1.628	2.881	1.434	-.539	-1.238	.069	-1.069	-1.091	2.100	-.390	.203	-2.391	9
4	-5.686	3.257	2.671	-3.510	3.073	.091	.079	.171	-.457	.023	1.594	-1.813	-.965	8
5	3.492	.919	-.053	-.300	-1.926	.222	.197	.466	1.988	-3.115	-1.375	.336	1.879	7
6	5.536	-1.494	.593	3.559	-.300	.268	-.852	.115	-.088	.510	-2.366	4.571	3.291	6
7	-5.168	-.912	.603	-.099	.604	.417	.492	.675	-2.455	2.702	2.197	.081	-1.537	5
8	-4.039	.232	-.252	-1.710	-1.069	-.507	.449	.276	1.928	-3.110	.305	-4.363	-.390	4
9	3.680	.803	-.916	-.605	.462	-.170	-.357	-.930	-.341	.154	-2.214	1.561	.210	3
10	2.053	-.063	.708	-.110	1.162	.587	.636	.617	-1.299	-.701	.562	4.611	.649	2
11	-.594	-.722	.472	.726	-.377	.340	.047	.259	.007	-.395	-.171	-.760	-1.705	1
12	-.321	-.017	-.335	.120	-.431	-.202	-.684	-.063	.188	.614	.268	-.073	.037	
n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	

S_n^m

February 1981



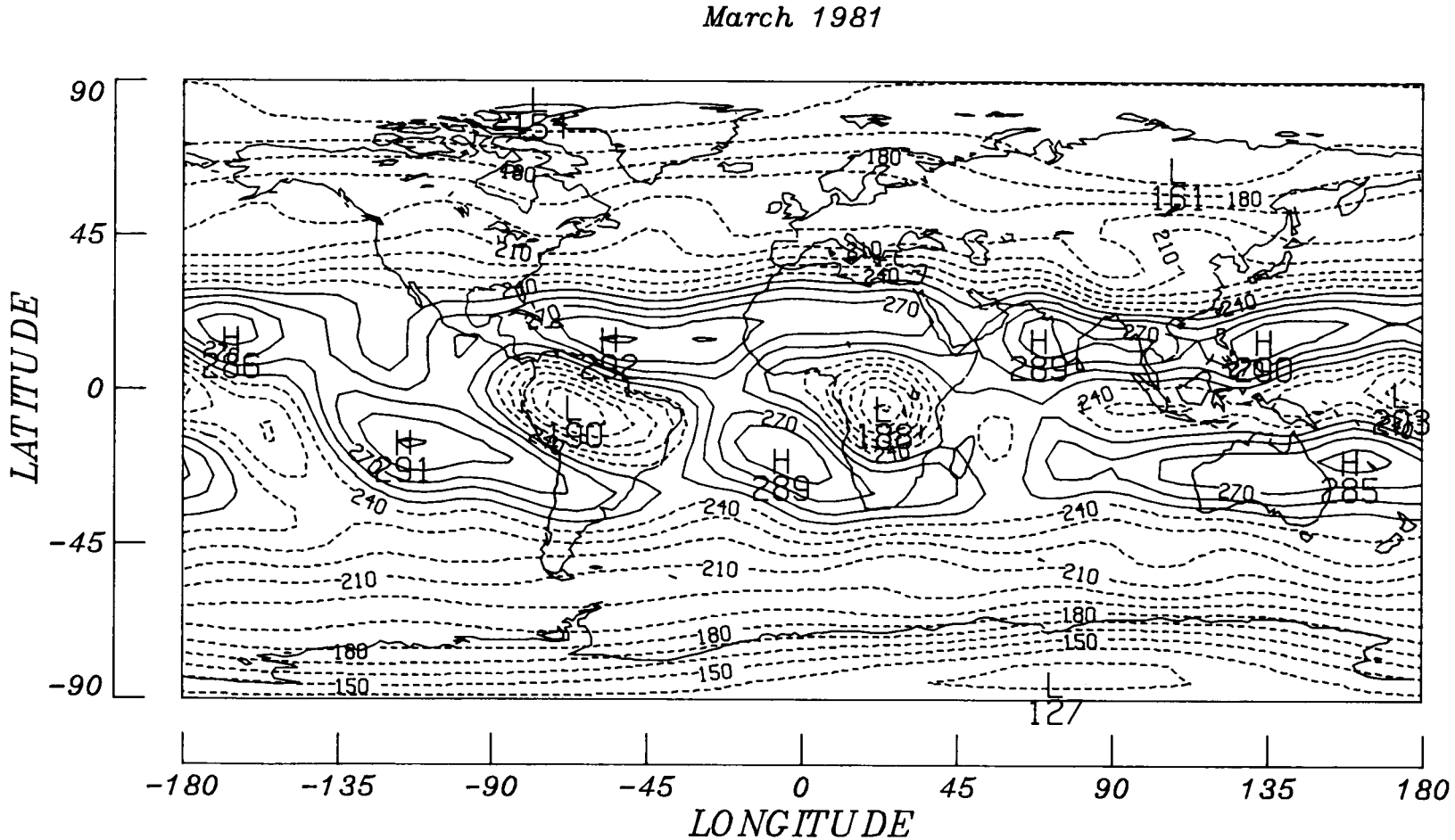
March 1981

C_n^m

		12	11	10	9	8	7	6	5	4	3	2	1	m/n
0	231.350	1.107	-.312	-.304	-.410	-.120	-.193	-.151	-.026	.356	.158	-.929	.441	12
1	-4.369	.208	.630	-.071	-.214	-.211	.744	1.222	.265	-1.245	.187	-1.091	.587	11
2	-28.165	1.503	.061	.938	-.217	.104	.283	.001	.213	-.226	.254	1.628	1.846	10
3	.729	-.278	.762	2.789	-.679	-.168	-.375	-1.187	-.541	1.980	1.364	1.678	-.987	9
4	-6.298	-.213	2.070	-1.808	.502	-.581	.016	.170	-.212	-.906	-.854	-.932	.110	8
5	5.689	-.597	-.570	-1.664	-1.767	.151	-.274	1.514	1.402	-2.228	-2.776	-1.083	-.265	7
6	4.940	.690	-1.372	2.995	1.001	.558	.366	.182	-.173	2.546	1.068	1.095	1.650	6
7	-3.417	.593	.130	.820	1.100	.450	-1.140	.472	-1.895	1.575	2.701	.727	-1.317	5
8	-7.242	-.593	1.546	-1.729	-1.416	-.673	.709	.142	.696	-3.996	-1.799	-.030	.567	4
9	2.619	.133	1.140	-.441	-.782	-.726	.596	-.570	-.717	.598	-.190	.564	-1.187	3
10	3.339	.303	.427	.601	1.530	-.658	.014	-.462	-.809	-1.064	-.062	-.443	-.376	2
11	.010	-1.190	-1.309	-.218	.347	-.118	-.265	1.019	.186	.013	-.151	.866	-1.163	1
12	-.898	.156	-.406	.429	-.921	.756	-.466	-.018	.269	.513	.883	.483	-.677	
n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	

S_n^m

March 1981



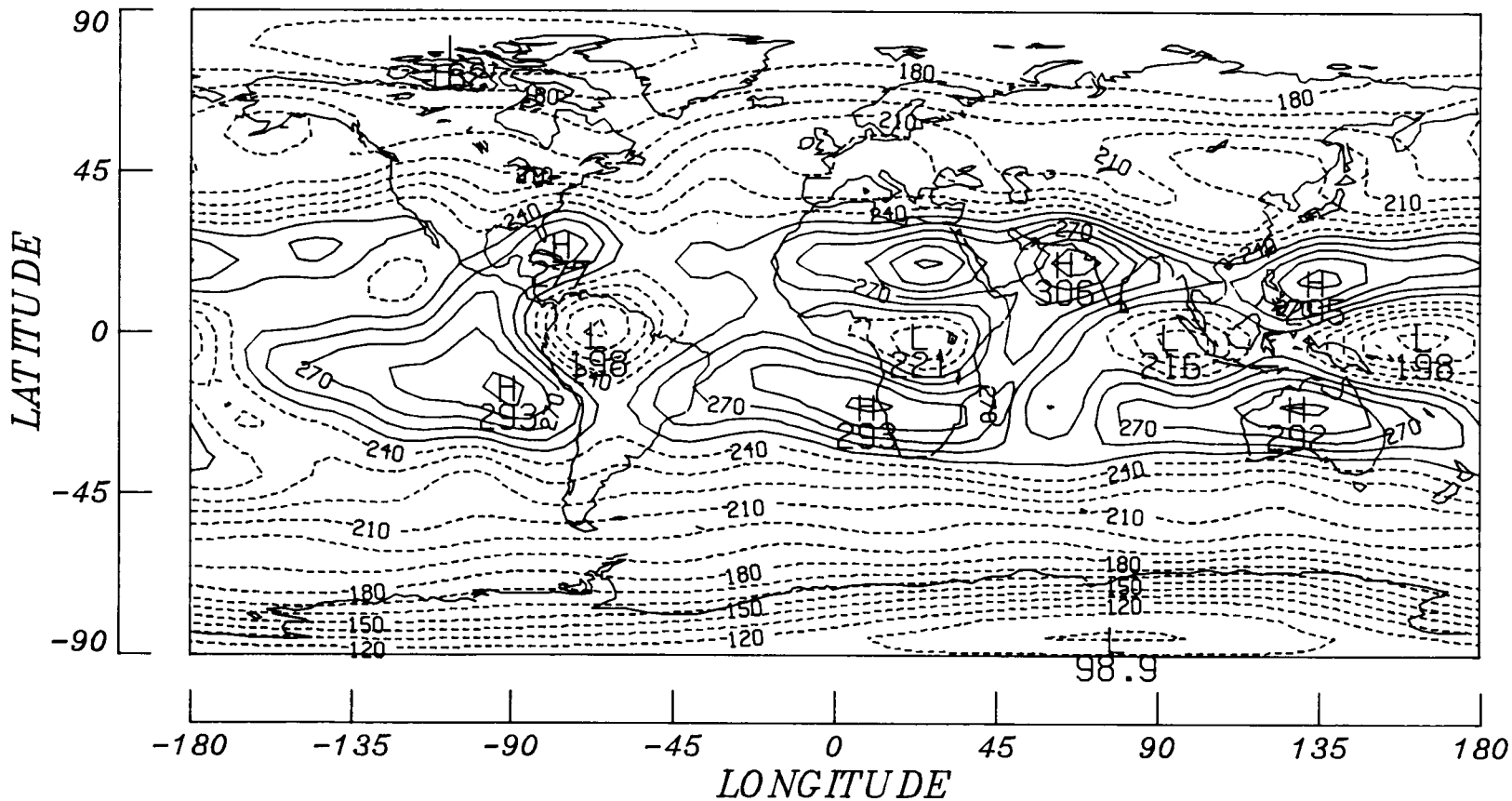
April 1981

C_n^m

		12	11	10	9	8	7	6	5	4	3	2	1	m/n
0	232.819	-.040	-.720	-1.072	.435	.727	.180	.306	-.793	-.556	.936	-1.105	.797	12
1	.841	2.690	-.002	-.626	.103	-.135	.006	.603	.970	-.012	-.799	-1.417	.827	11
2	-28.460	1.682	-.624	-.117	-.284	.422	.001	.302	.049	.718	-1.060	1.651	2.524	10
3	4.091	-1.303	.620	3.365	-.023	.056	-.136	-.277	-1.808	.449	1.495	1.345	-2.505	9
4	-7.333	.985	1.439	-1.509	-.759	-.312	.140	-.407	-.453	-.478	.708	-.792	-2.161	8
5	2.428	-.602	-.391	-1.846	-.229	.360	1.259	.582	2.244	-.027	-2.565	-.092	.660	7
6	3.846	-.850	.040	3.485	.572	1.185	-.701	1.542	-.605	1.069	-.735	1.281	4.013	6
7	.177	.211	.777	1.403	-.477	.740	.379	-.506	-3.599	-.086	.760	-.919	-2.211	5
8	-7.513	.761	1.158	-.945	-.567	-.419	-.061	-.675	1.168	-2.170	-.129	-1.343	.124	4
9	.716	-.350	.162	.094	.542	-1.188	-.065	-1.472	-.744	.390	1.858	1.301	-.457	3
10	3.389	.071	.299	-.894	.974	-.843	.689	.094	-.284	-1.093	-.454	2.968	1.296	2
11	1.474	-.305	-.983	-.937	.163	.525	-.556	.573	-.187	.370	.373	-.242	.999	1
12	-.623	.344	.395	1.109	-.326	.944	-.970	.030	-.237	.482	.907	.650	-.374	
n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	

S_n^m

April 1981



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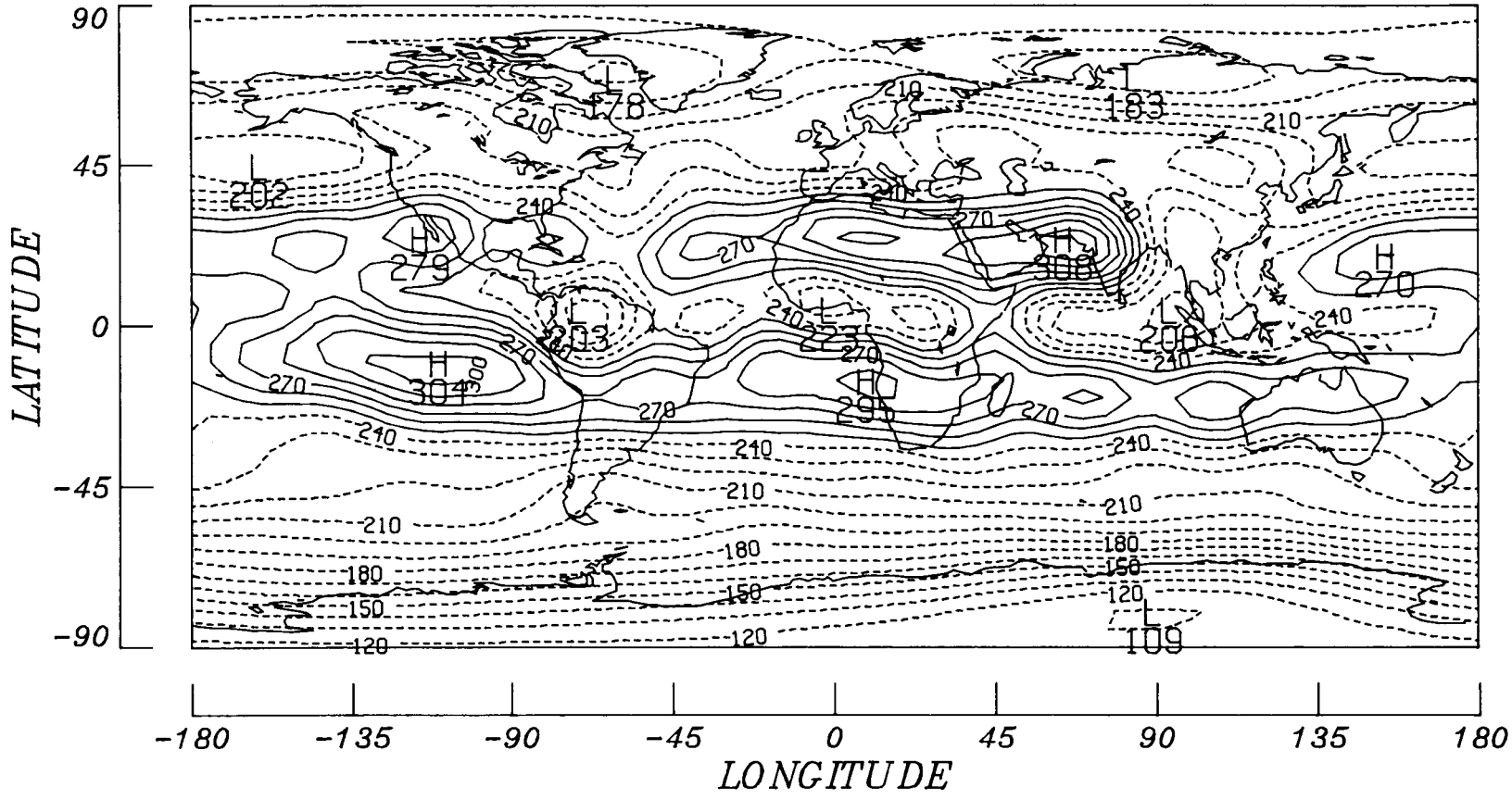
May 1981

C_n^m

		12	11	10	9	8	7	6	5	4	3	2	1	m/n
0	235.141	.519	-.494	-.560	.099	-.124	-.233	.548	-.322	-.294	-.004	-.598	-.015	12
1	5.952	1.784	.692	.123	-.173	.203	-.065	-.150	.552	-.963	-.254	-1.661	1.305	11
2	-27.041	1.769	2.206	.475	.366	.380	.056	-.593	.201	-.280	.343	.261	1.754	10
3	6.416	.685	.947	1.406	-.646	-.180	.688	-.224	-.415	.904	1.125	1.651	-1.406	9
4	-6.548	1.383	-1.311	-1.529	-2.091	-.369	.759	.350	-.006	.278	.347	.627	-1.298	8
5	-.453	-3.520	-2.430	-1.070	-1.326	-.499	.836	.588	.428	.282	-.416	.044	-.298	7
6	3.544	-1.570	.845	2.423	1.120	.821	-.160	.912	-.435	-.276	-.013	.852	1.918	6
7	4.051	2.436	1.478	1.223	.708	-.037	.311	.378	-1.359	-1.309	.586	-.859	-3.371	5
8	-6.564	.297	.835	-1.198	-.428	-.481	.602	-.786	.544	-2.683	-.152	-.373	1.144	4
9	-2.305	-1.292	1.275	-.621	-.872	-1.382	.386	-.550	-.123	.442	1.262	2.085	1.983	3
10	4.036	.133	1.305	.798	-.163	-.895	-.195	.375	-1.221	.751	-.058	5.799	1.774	2
11	2.504	.524	-1.361	.838	.457	.451	-.318	.362	-.295	.682	.647	-.980	-2.136	1
12	.244	.542	-.319	.585	.356	.405	-.354	-.153	.721	.210	1.099	-.409	-.770	
n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	

S_n^m

May 1981



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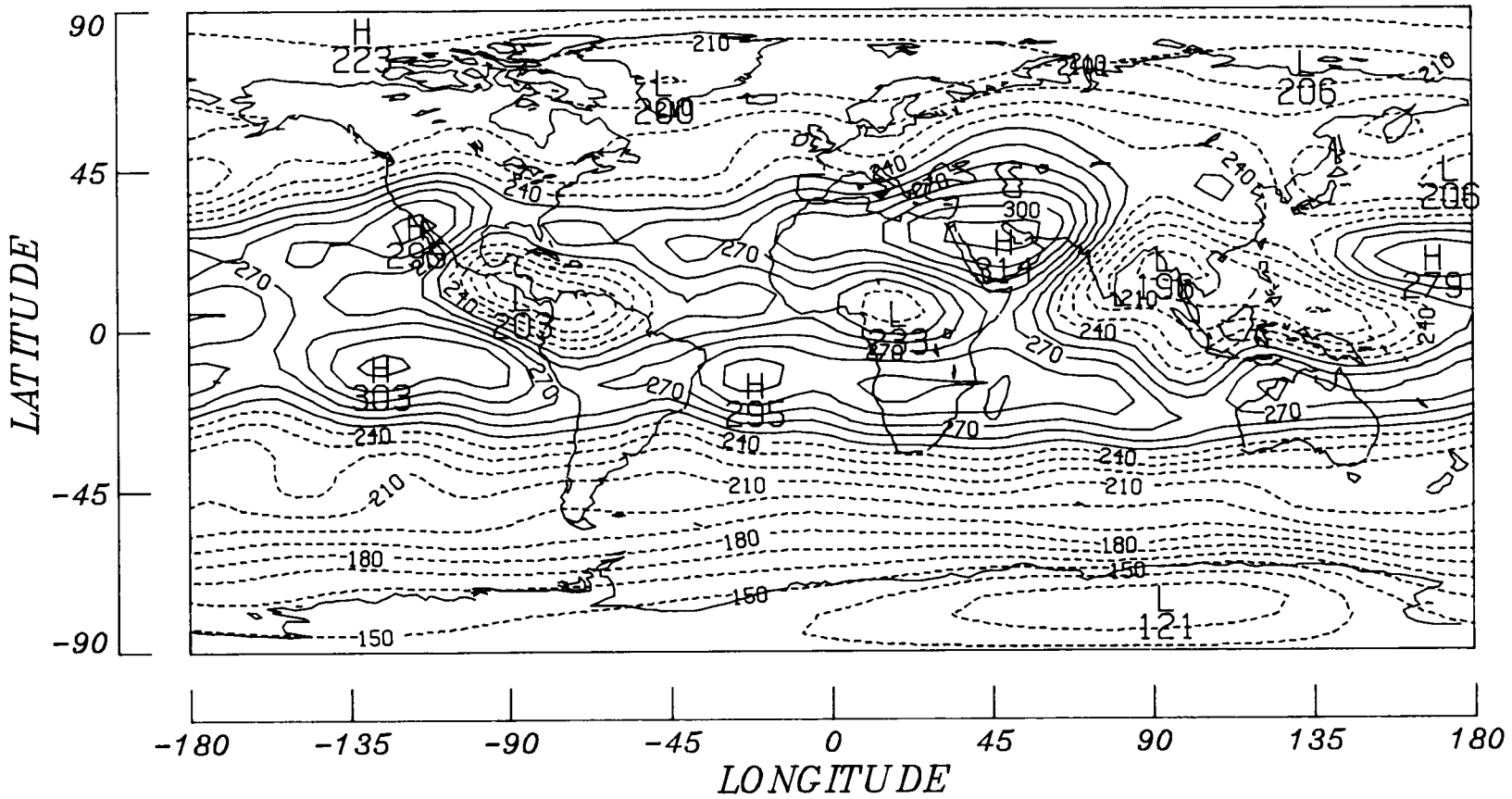
June 1981

C_n^m

		12	11	10	9	8	7	6	5	4	3	2	1	m/n
0	237.526	-.106	-.514	-.274	-.601	-.683	-.330	-.237	-.537	.042	-.328	-.307	-.395	12
1	11.250	4.363	-.196	-1.218	-.066	-.409	-.164	-.897	.383	-.063	-.528	.105	.145	11
2	-25.573	2.850	3.476	.257	.026	.182	.287	.170	.289	-.704	.407	1.518	1.552	10
3	7.048	-.576	2.293	.355	.290	.504	.015	.405	-.656	.041	1.401	.732	-1.293	9
4	-5.378	.957	-2.779	-1.380	-2.878	-.749	-.372	-.637	-.714	-.474	-.594	-.869	-1.426	8
5	-3.830	-3.224	-3.982	-.305	-2.558	-1.504	.432	-.644	-.075	-.343	-1.757	-.386	-.030	7
6	4.583	-2.101	.382	1.707	-.164	-.538	1.487	-.956	-.267	.345	.161	.006	.481	6
7	6.462	.385	2.054	.007	1.040	.781	1.448	.334	-.932	-.996	1.666	-1.071	-3.332	5
8	-4.083	.456	2.001	-1.014	.499	-.370	-.001	1.734	.411	-3.078	-.022	-.726	3.217	4
9	-4.088	.724	-.183	-1.580	.130	-1.008	.631	-.002	-.749	.465	.607	4.097	2.799	3
10	2.618	-.021	-1.563	.117	-.504	-.254	-.287	-.632	-1.017	.563	-.170	8.304	.166	2
11	1.507	-.842	-1.454	.577	-.611	.509	-.422	1.010	-.712	-.030	.776	-.485	-1.634	1
12	1.257	.368	.971	.600	.894	.312	-.020	.837	.046	.156	.343	-.141	.401	
n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	

S_n^m

June 1981



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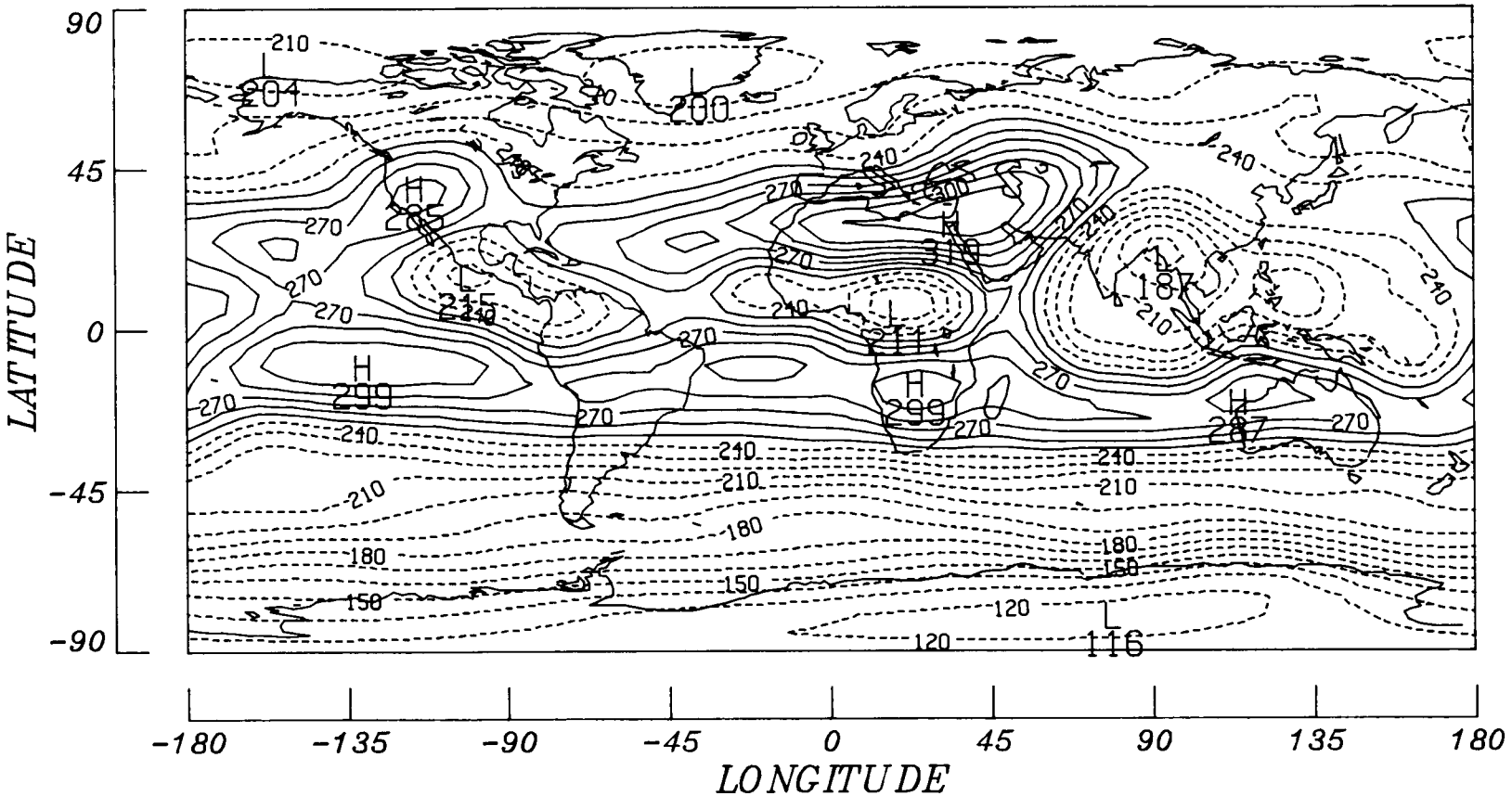
July 1981

C_n^m

		12	11	10	9	8	7	6	5	4	3	2	1	m/n
0	238.189	-.722	.254	-.470	-.164	-.344	-.069	.155	-.935	-.548	.325	.203	-1.470	12
1	13.699	4.057	-.051	-.098	-.118	-.101	-.247	-.613	.145	1.553	.768	-.367	-.184	11
2	-24.621	3.647	4.172	.578	.278	.199	-.291	-.254	.727	.993	.616	.491	2.040	10
3	9.587	-.572	2.788	-.400	.019	.491	.249	.502	-.670	-.619	.720	.633	-.289	9
4	-8.707	.629	-1.567	-.925	-4.283	.228	.153	-.146	-1.089	-1.782	-.353	-.994	-.844	8
5	-6.827	-3.140	-3.711	-.769	-2.310	-1.092	.095	-.790	.395	-.701	-1.406	-1.547	.426	7
6	4.608	-1.604	-1.429	2.451	.214	.132	1.452	-.789	-.686	-.902	1.173	.569	.653	6
7	7.668	1.693	.022	.248	.143	-.155	1.052	1.133	-2.114	-.168	2.617	-.120	-3.617	5
8	-3.058	1.066	1.676	-1.621	-.365	-.643	.707	1.060	.586	.216	.733	.604	3.713	4
9	-2.258	.055	1.651	-.938	.429	-.710	.538	-.537	.318	.407	-.135	3.826	4.574	3
10	1.028	-.700	.430	1.217	-.007	.078	.056	-.154	-.372	.974	.183	5.436	-1.001	2
11	.108	-.670	-1.565	.492	-.751	.545	-.089	.781	-.778	.001	.143	-.667	-4.118	1
12	1.039	1.269	-.797	-.103	.585	.051	-.025	.499	-.115	-.107	.285	-.147	.563	
n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	

S_n^m

July 1981



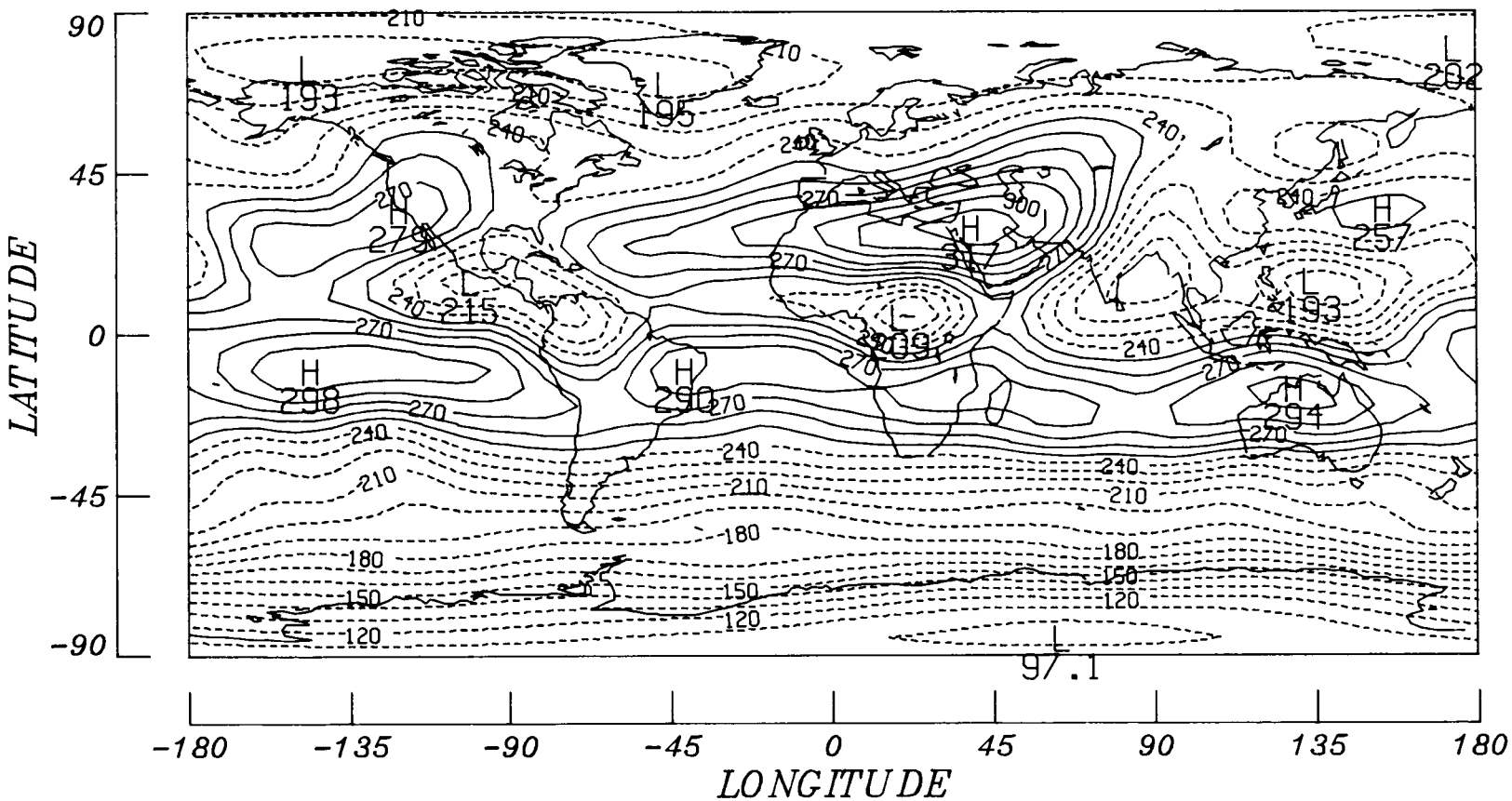
August 1981

C_n^m

		12	11	10	9	8	7	6	5	4	3	2	1	m/n
0	238.330	.074	.288	-.082	-.550	-.500	.149	-.049	-.158	-.936	.716	.166	-.721	12
1	12.756	2.611	.500	.501	-.058	-.030	-.116	-.698	.518	.534	.158	-.388	-.327	11
2	-25.826	4.567	3.340	.081	-.104	.464	-.192	-.378	.267	.608	.550	-.433	1.536	10
3	10.661	.562	2.367	-.346	-.035	.395	.065	.556	-.057	.068	.377	.280	-.523	9
4	-8.874	-1.307	-1.649	-.639	-2.932	-.435	-.067	.364	-.643	-1.995	-.857	-.161	.681	8
5	-6.670	-3.684	-3.608	-1.006	-2.298	-1.501	.831	-.907	.376	-1.866	-1.303	-.691	1.328	7
6	2.341	.164	-.555	1.948	-.166	-.202	.921	-.719	-.225	-.517	1.019	-.005	.475	6
7	8.014	2.267	-.545	.254	.012	1.246	1.293	1.419	-2.100	-.484	2.723	-.724	-2.592	5
8	-3.211	.040	.287	-1.449	1.515	-.305	.384	.635	.827	-.019	-.353	1.003	3.226	4
9	-2.911	-.696	1.185	-.216	1.362	-1.035	.241	-.030	-.741	.498	-1.276	5.089	2.799	3
10	-.069	-.558	.627	1.372	-.019	.112	.600	-.174	-1.177	.344	-.215	4.819	-.958	2
11	1.573	.342	-.378	.442	-.593	.478	.366	-.224	-.723	-.284	-.323	-.032	-1.650	1
12	1.703	1.663	.120	-.409	.199	.419	.143	.207	.495	.488	.420	-.207	-.096	
n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	

S_n^m

August 1981



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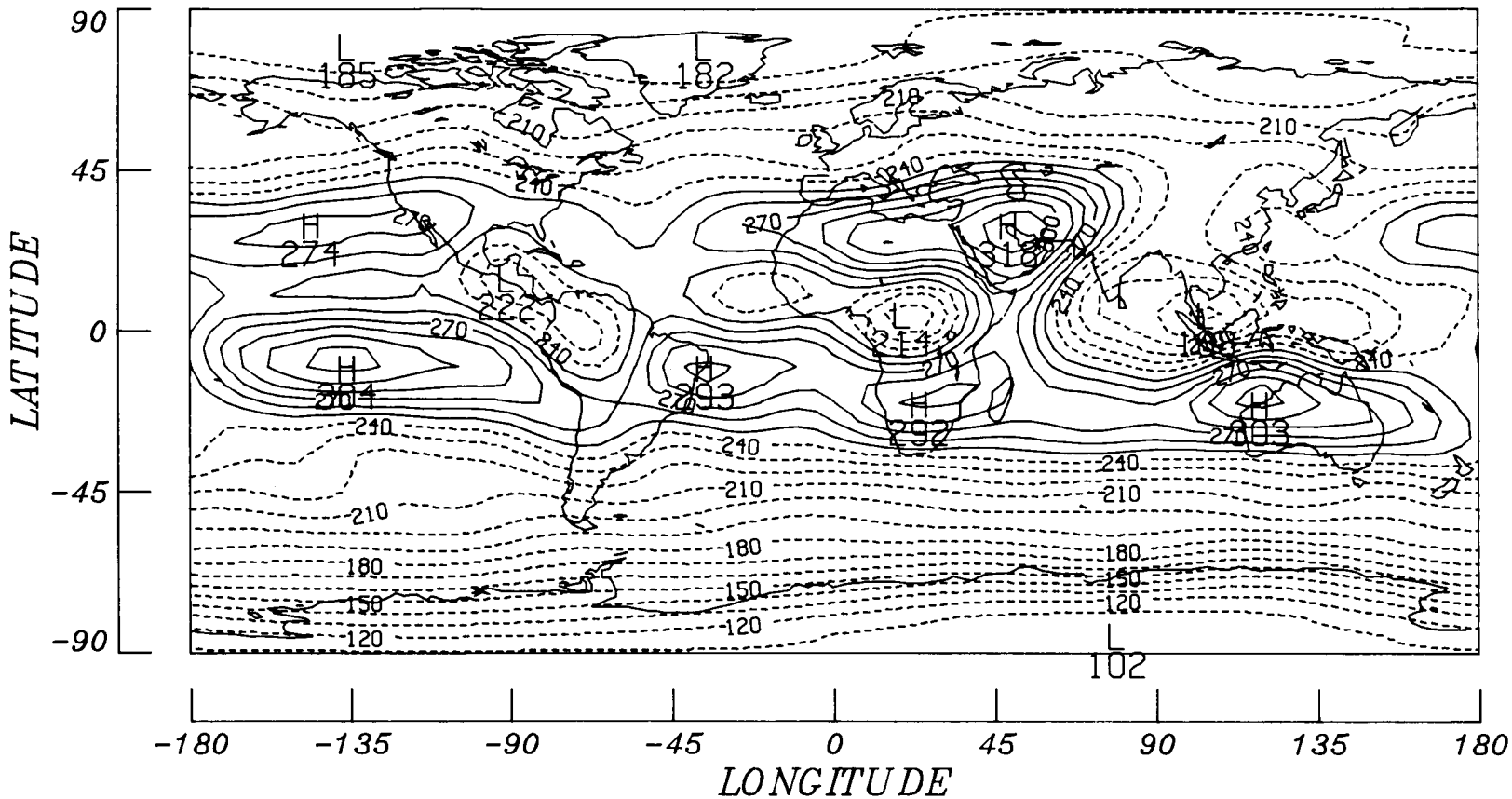
September 1981

C_n^m

		12	11	10	9	8	7	6	5	4	3	2	1	m/n
0	235.400	.166	-.428	-.145	-.460	-.748	-.590	.597	-.514	-.805	.631	-.410	.019	12
1	8.483	2.448	-.409	-.021	.677	-.158	-.216	.169	.555	.518	-.212	-.534	.417	11
2	-27.322	3.008	3.097	.515	.887	.486	.815	.171	.708	1.015	-.509	1.264	1.727	10
3	6.991	-.424	2.011	-.160	.564	.639	.466	.214	-.623	.363	.977	1.663	-1.855	9
4	-9.620	.047	-1.264	-1.881	-4.327	.002	-.313	-.302	-.805	-1.249	.662	-.540	-.460	8
5	-3.646	-1.810	-1.944	-.997	-.948	-1.122	.695	-.363	.441	-.382	-1.899	-1.318	2.851	7
6	4.310	-.650	.203	2.370	.807	-.136	1.280	-.247	-.399	.452	-.350	.721	.942	6
7	6.668	1.058	.790	.154	-.253	.651	1.800	1.377	-2.627	-1.032	1.678	-1.283	-4.923	5
8	-4.325	.272	.588	-1.470	-.131	-.883	.270	.741	.650	-.785	.845	-.270	2.737	4
9	-2.769	-.557	.621	.412	.652	-.746	-.647	-.965	.202	1.083	.871	4.217	2.825	3
10	.488	.026	.542	.811	.049	.291	.073	-.469	-1.379	-.227	-.370	5.468	-.738	2
11	1.127	-.060	-1.382	-.874	-.100	-.408	-.014	.163	-.186	-.384	-.188	-.231	-2.007	1
12	.705	.094	-.854	-.379	.955	-.378	-.253	.049	.578	.409	.308	-.075	-.156	
n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	

S_n^m

September 1981



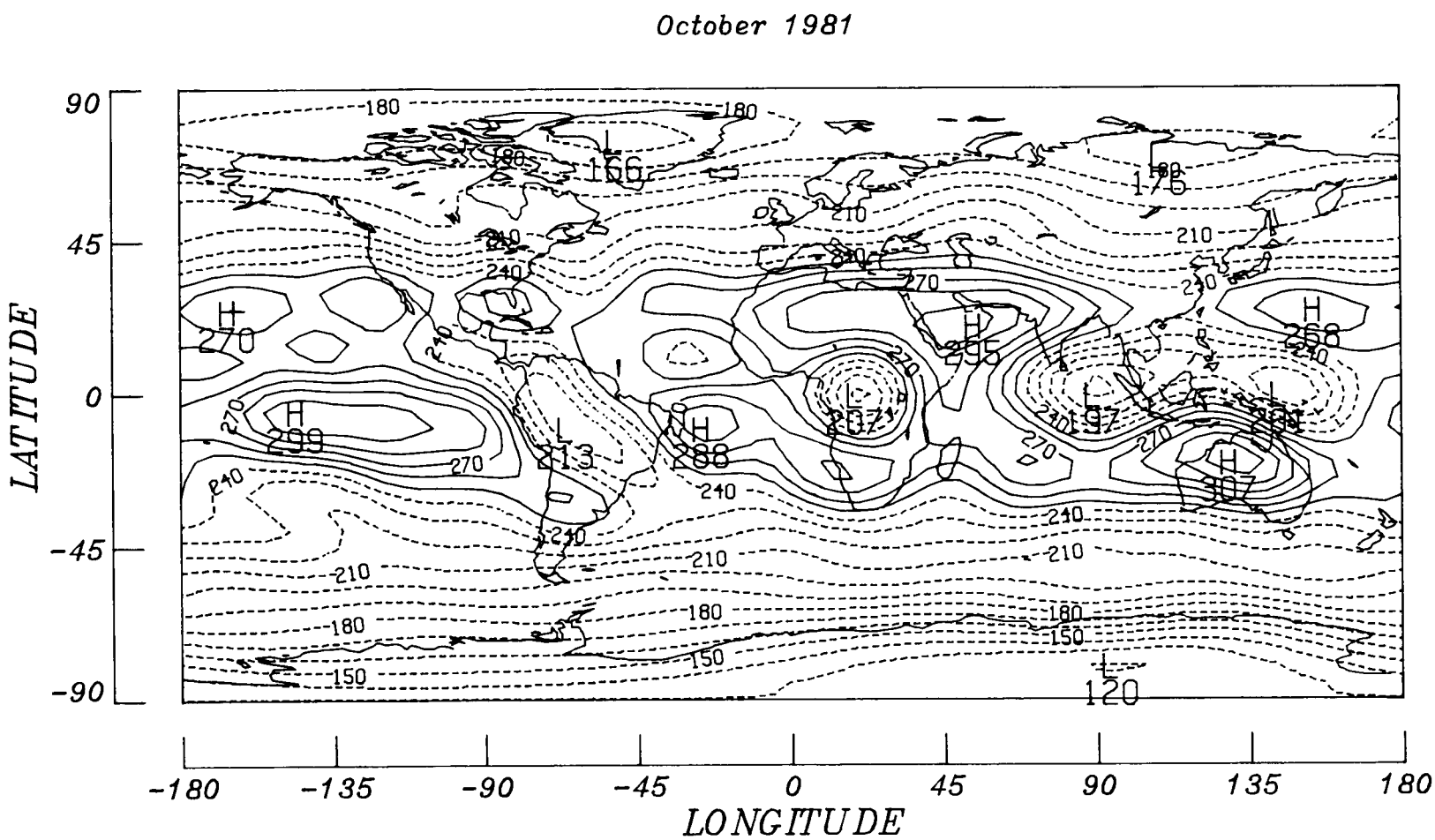
October 1981

C_n^m

		12	11	10	9	8	7	6	5	4	3	2	1	m/n
0	234.238	.629	-.340	-.369	-.139	-.293	-.251	-.196	-1.024	-.128	1.181	.284	.078	12
1	3.421	1.289	1.100	-.190	-.055	.543	.383	.024	.346	-.371	-.377	-.293	1.073	11
2	-27.709	2.715	2.139	-.262	-.508	1.203	.856	-.682	1.044	-.145	-.485	.385	1.825	10
3	2.891	-.209	2.292	.882	.295	.384	-.319	-.220	-1.249	.597	1.587	1.064	-3.362	9
4	-7.924	-1.118	-.063	-2.514	-2.088	-.264	-.376	1.139	-1.937	-.699	.739	-.809	.313	8
5	-.056	-1.025	-1.138	-1.390	-.989	-.583	1.000	-.487	1.880	-.940	-2.257	-.562	2.998	7
6	4.187	1.486	1.039	2.712	.914	.298	2.010	-.146	1.070	1.924	-.383	2.027	.708	6
7	3.951	.406	.503	-.804	-.064	1.546	.147	.471	-3.448	-.614	1.849	-.711	-3.822	5
8	-4.186	-1.036	-.597	-2.391	-1.124	-.400	-.901	1.198	.873	-2.486	-.840	-2.067	1.713	4
9	-2.272	-.314	-.076	.581	.116	-1.007	-.654	-1.318	.311	.654	.360	3.105	1.269	3
10	1.135	.521	.448	.876	1.165	.386	.457	-.824	-.846	.798	.010	5.388	.004	2
11	1.859	-.155	-.458	-.668	-.046	.816	.823	.664	.324	-.193	-.484	.115	.076	1
12	1.141	-.106	.195	.607	.457	-.069	-.256	.388	.433	.632	.111	-.161	.236	
n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	

S_n^m

October 1981



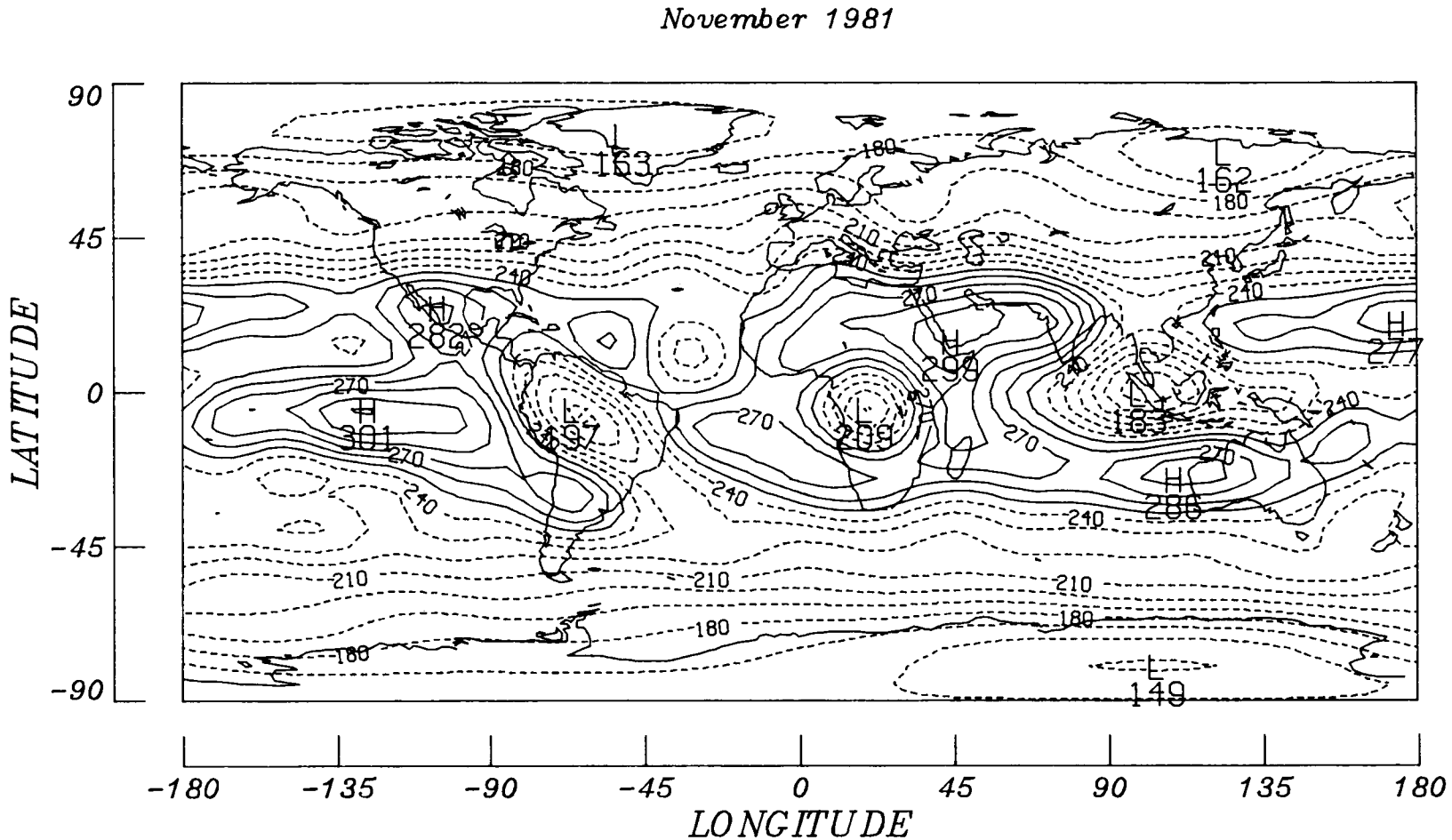
November 1981

C_n^m

		12	11	10	9	8	7	6	5	4	3	2	1	m/n
0	232.497	.506	.393	.171	.294	.379	-.364	-.331	-.405	.386	1.055	-.376	-.766	12
1	-2.468	1.847	.320	-.382	.533	1.299	.239	.468	.017	-1.461	-.475	-1.093	1.367	11
2	-27.025	1.698	.873	.816	.280	.462	.817	.104	.719	-.036	-.916	1.060	2.303	10
3	.060	-.574	1.878	-.063	-.423	-1.086	.331	-.684	-.430	1.948	1.262	1.849	-3.059	9
4	-5.537	.054	-.686	-2.252	-.503	-1.274	.334	.869	-1.449	-1.728	.830	-.207	-.043	8
5	2.794	-1.134	-.443	-.410	-1.044	.157	.254	2.049	1.087	-1.392	-1.528	-.594	2.848	7
6	4.996	.937	2.423	2.112	1.424	.059	1.192	.573	.786	2.743	-1.189	2.112	1.284	6
7	1.043	.620	-.342	.003	.938	1.042	.671	1.426	-3.419	-.969	.205	-.054	-2.979	5
8	-4.272	-1.637	-1.190	-1.224	-.978	-.603	.355	.489	1.015	-3.868	1.092	-3.357	.433	4
9	-1.756	-.043	.381	-.301	.387	-.003	-.586	-.480	.278	1.203	3.033	2.280	.693	3
10	2.150	1.868	.554	-.318	1.295	1.144	-.353	.042	-1.221	-.396	-.202	6.907	-.798	2
11	1.350	.108	-.697	-.495	-.136	.094	.859	.652	-.018	-.883	.067	.230	-1.476	1
12	.564	-1.436	.330	.493	-.124	-.475	.087	.560	.361	.984	.388	-.574	-.231	
n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	

S_n^m

November 1981



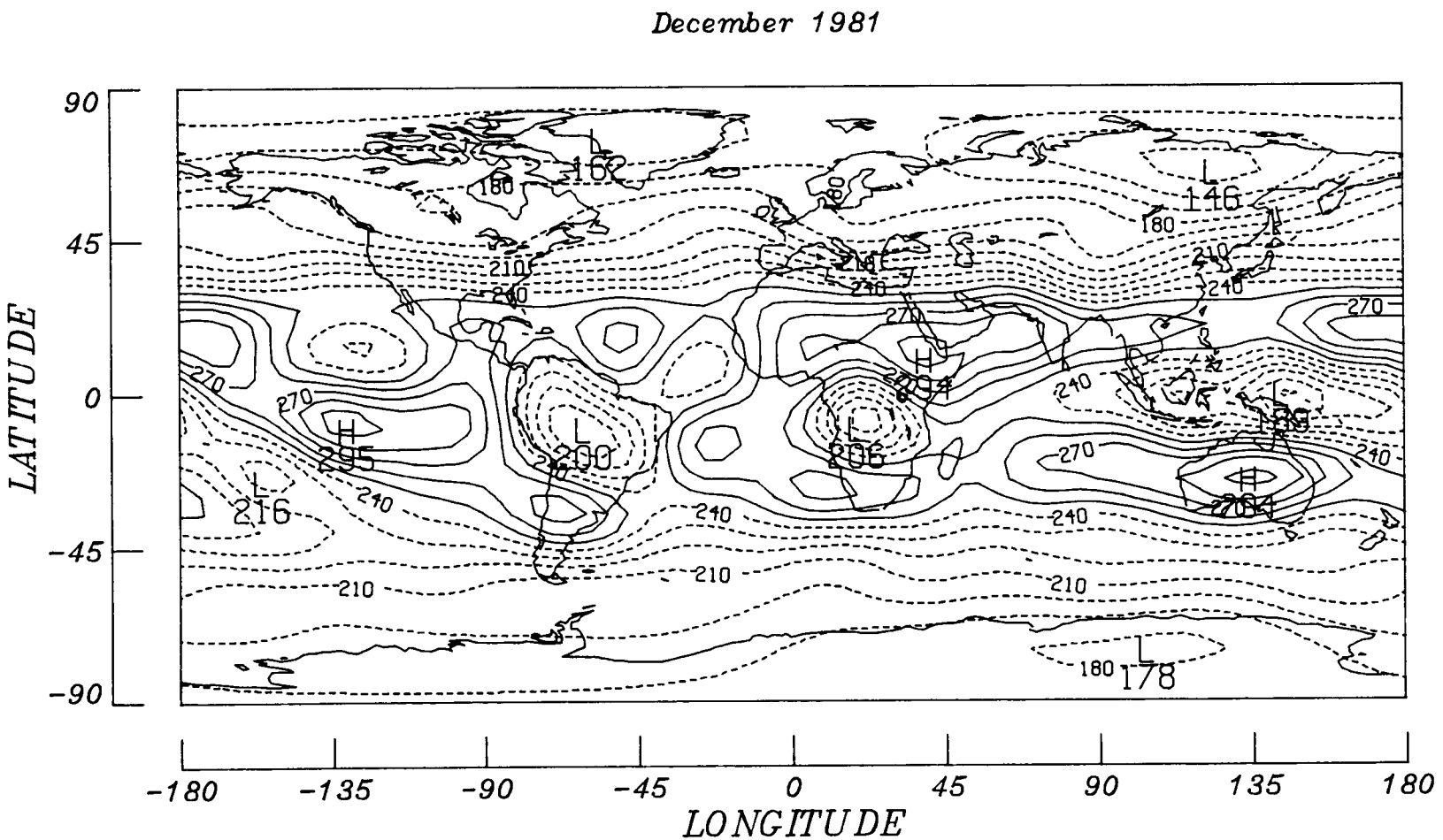
December 1981

C_n^m

		12	11	10	9	8	7	6	5	4	3	2	1	m/n
0	231.001	.958	-.169	-.010	-.013	-.688	-.067	-.154	-.138	.486	1.123	-.404	-.786	12
1	-7.312	1.272	.290	-.340	-.051	.315	-.492	.551	.576	-.375	.302	-.624	1.617	11
2	-25.932	.682	.148	.284	-.570	.362	.249	-.302	.419	-1.050	-1.299	1.091	2.502	10
3	-2.338	-1.311	3.272	1.204	-.634	-.645	-.153	-1.122	-.840	2.341	.996	1.518	-2.670	9
4	-3.853	.225	1.534	-3.447	1.347	-.424	.655	.082	-.884	-.144	1.220	-1.437	-1.155	8
5	4.452	.602	-.932	-1.014	-.286	-.516	.239	.714	.609	-3.207	-2.732	-.195	2.449	7
6	7.245	1.029	.489	3.373	-.360	-.625	.244	.374	.191	.753	-1.650	3.856	1.173	6
7	-2.400	.115	1.085	-.657	-.451	.801	.880	1.121	-2.231	.859	1.648	-.123	-3.330	5
8	-3.908	-.880	.119	-2.769	-.440	.387	.905	1.313	1.755	-1.951	-.486	-3.999	-.606	4
9	.804	.548	-1.001	-.175	.872	.143	-.545	-1.031	-.260	.827	.019	1.422	-.661	3
10	1.701	.501	.488	.862	1.110	-.024	.233	-.474	-.930	.227	-.147	3.473	-.588	2
11	.860	-.754	.379	.132	-.075	-.414	.355	.345	.086	-.463	-.319	.829	-.347	1
12	.587	-.353	-.057	.584	-.016	.191	-.767	-.202	.259	-.156	.562	-.056	-.255	
n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	

S_n^m

December 1981



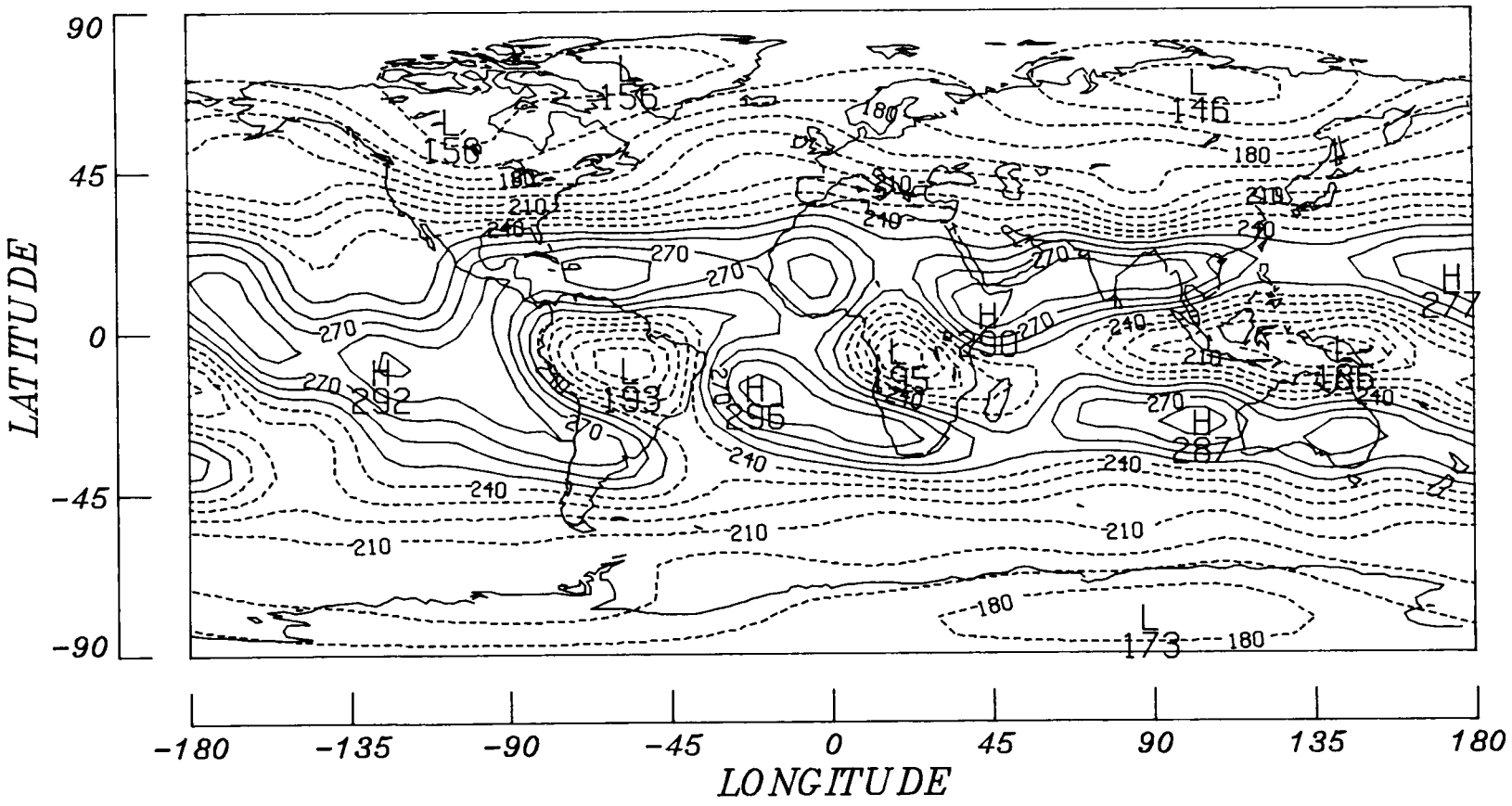
January 1982

C_n^m

		12	11	10	9	8	7	6	5	4	3	2	1	m/n
0	230.944	-.152	-.785	-.368	.050	-.099	-.282	.072	-.775	.483	.782	-.680	-.463	12
1	-9.477	2.170	.982	.006	-.653	.175	-.362	-.176	.235	-.491	1.633	-.122	.189	11
2	-26.798	.727	.210	.384	-.406	.598	1.048	-.091	1.303	-.246	-1.022	1.785	2.704	10
3	-2.525	-.646	3.200	1.129	-.673	-.541	.083	-.888	-1.165	1.683	-.313	1.185	-1.639	9
4	-4.282	.453	2.581	-3.056	3.400	-.015	-.032	-.125	-1.187	-.521	1.354	-2.361	-1.997	8
5	6.103	-.906	1.048	-.041	-.657	-.239	-.577	.312	2.341	-1.921	-2.414	-1.503	1.298	7
6	7.221	.048	1.815	3.750	-.166	-.714	.018	-1.285	.177	1.488	-2.130	4.267	1.992	6
7	-4.912	1.302	.428	-1.195	-.015	.624	.966	.880	-3.320	1.000	2.300	1.612	-3.086	5
8	-3.783	-.467	-1.172	-2.906	-1.474	.373	.806	.411	.544	-3.164	-1.187	-4.174	-.377	4
9	2.850	-.893	.315	.411	.762	-.851	-.934	-.819	1.002	.582	-1.370	-.424	1.458	3
10	1.475	.888	1.276	.447	1.429	.213	.397	-.134	-.809	.009	-.079	3.340	.969	2
11	.119	-.004	-.537	-.354	-.312	.881	-.039	-.037	-.690	-.564	.227	1.399	-3.472	1
12	.170	-.523	-.482	.546	-.113	-.519	-.970	.066	.907	.589	.065	.558	.070	
n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	

S_n^m

January 1982



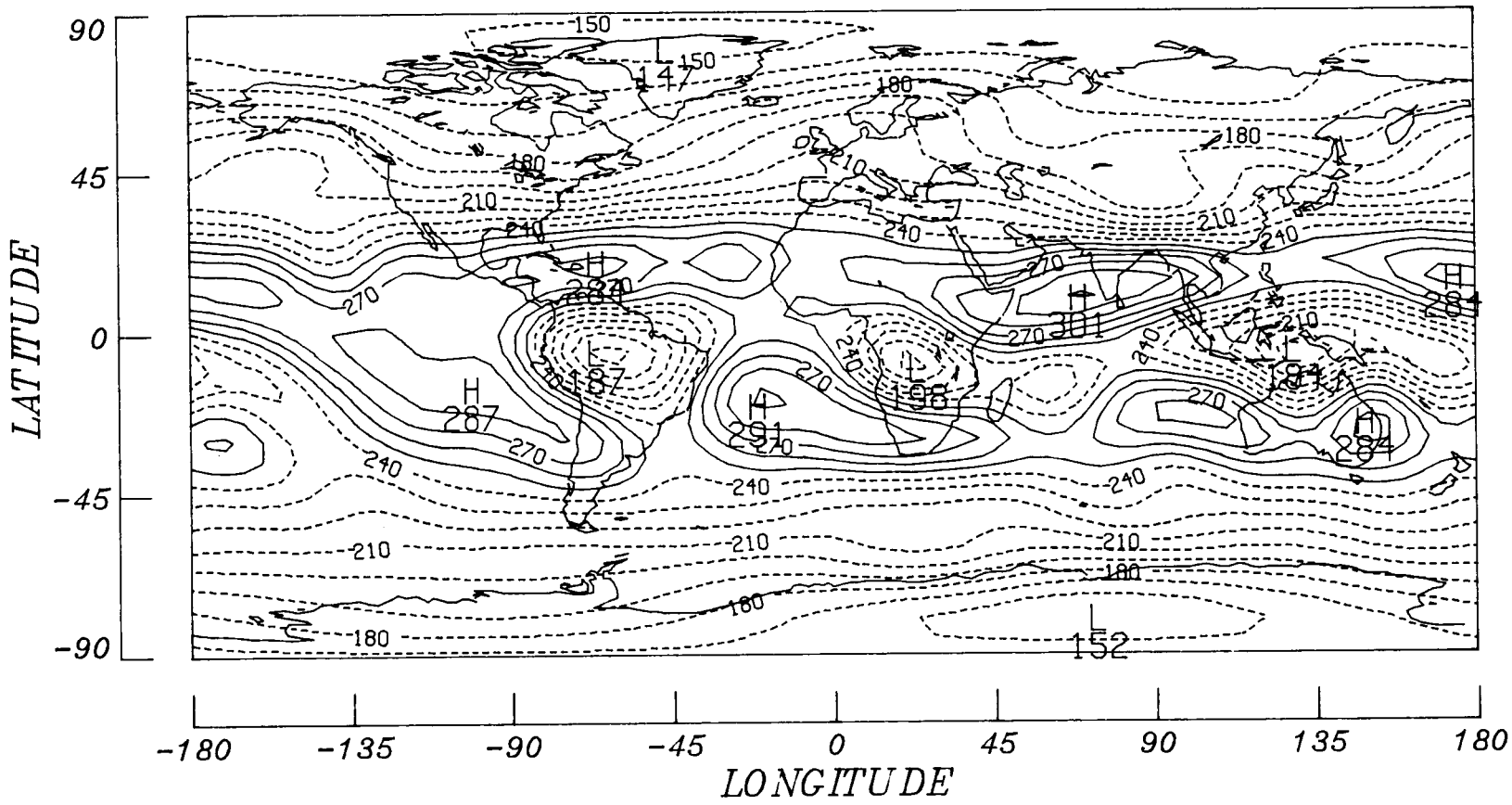
February 1982

C_n^m

		12	11	10	9	8	7	6	5	4	3	2	1	m/n
0	231.243	.192	.461	.373	-.203	-.878	-.029	-.120	-.265	.324	.533	-.902	-.166	12
1	-9.285	1.653	.565	-.992	-.041	.103	.593	.108	1.168	-.936	1.305	.462	-.116	11
2	-26.718	.273	-.713	.926	.686	.754	.184	.174	.346	.102	-.500	1.646	2.319	10
3	-.761	-.217	2.320	1.689	-.507	-.683	-.644	-.869	-1.131	1.946	.295	-.486	-.822	9
4	-6.354	1.108	3.536	-2.937	3.114	.520	.525	.437	-.778	-.318	.580	-2.624	-1.682	8
5	6.787	-.828	1.480	-.295	-1.471	-.817	-.662	1.255	.813	-1.180	-2.325	.104	-.179	7
6	4.746	-.430	.464	4.067	.053	-.314	-1.318	-1.361	.203	2.221	-1.245	5.178	3.004	6
7	-6.052	.808	-.046	-.159	.249	.447	1.359	.276	-1.835	1.134	2.465	1.129	-1.244	5
8	-4.883	.511	-.011	-2.054	-.906	-.334	.304	-.520	.172	-4.113	-.429	-4.603	.481	4
9	3.694	-.263	.007	.332	.501	.019	-.381	-.469	-.009	.576	-1.493	.614	.630	3
10	2.095	-.125	.963	.499	1.496	-.032	.292	.582	-.956	-.321	.057	3.850	-.012	2
11	-1.028	-1.040	-.168	-.387	-.242	-.062	.250	.145	.954	.273	-.584	.006	-2.849	1
12	.083	-.318	-.915	-.244	-.782	.352	-.719	-.310	.251	-.030	.003	.567	.529	
n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	

S_n^m

February 1982



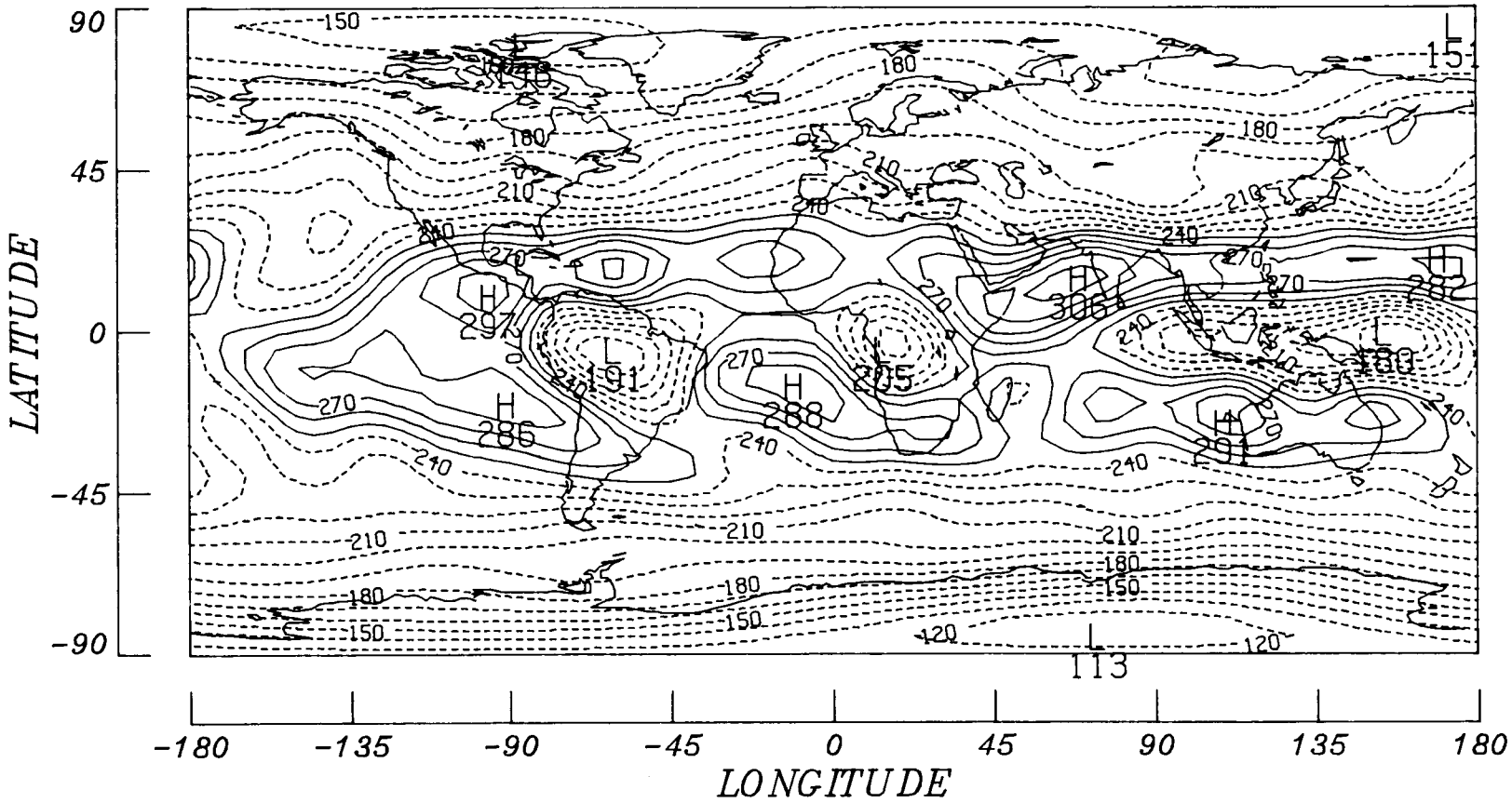
March 1982

C_n^m

n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	m/n
0	230.812	-.267	.280	-.122	-.560	.112	.416	-.624	.036	.731	.942	-.908	.335	12
1	-5.166	2.728	.781	-.078	-.239	.634	-.006	-.488	1.272	-.557	.582	.573	.354	11
2	-29.185	1.477	-2.415	.209	-.096	-.435	-.094	-.048	1.053	-.501	-1.472	1.881	1.927	10
3	1.098	-.765	1.582	1.668	-1.109	-.292	.307	-.671	-1.722	.764	1.227	.906	-2.242	9
4	-7.395	.131	3.370	-2.032	1.318	-.885	-1.009	.077	-1.513	-.671	2.279	-2.394	-.493	8
5	5.799	-.497	1.568	-.249	-.532	-.966	-.089	.948	1.769	.364	-2.360	-1.561	1.054	7
6	3.695	.712	1.037	3.721	.187	-.991	-.015	-.674	.310	2.323	-1.983	5.015	3.152	6
7	-2.764	.360	-1.667	-.480	.171	.895	1.557	-.309	-3.601	-.741	1.591	2.418	-2.052	5
8	-6.190	-.229	-.182	-1.746	-1.362	.615	-.141	-.494	.541	-3.546	.502	-3.793	.516	4
9	2.521	.507	1.521	.254	-.432	-.767	-1.284	-.165	.278	.283	-.028	-.458	.476	3
10	3.346	.325	1.314	.056	1.414	.214	.368	-.067	-.992	-1.256	.838	3.667	1.071	2
11	.170	-.484	-.793	-.668	.255	.410	.573	-.096	.081	.051	-.744	.216	-1.396	1
12	-1.644	.505	-.325	.625	-.483	-.315	-.612	.358	1.514	.493	.889	.109	.932	

S_n^m

March 1982



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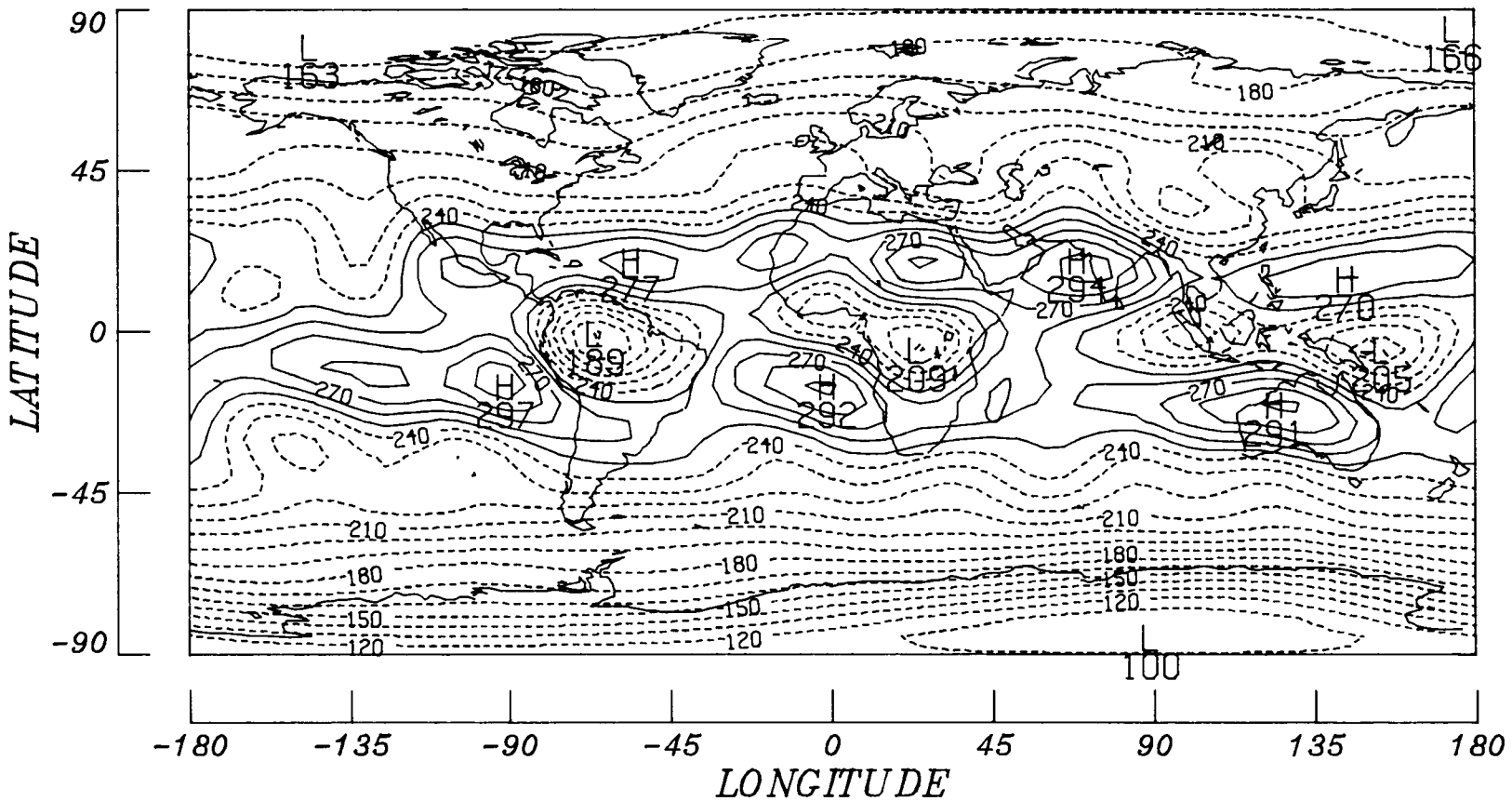
April 1982

C_n^m

		12	11	10	9	8	7	6	5	4	3	2	1	m/n
0	231.700	.310	-.533	-.636	.050	.674	.322	-.123	-.430	-.134	.787	-.326	.037	12
1	.905	1.760	.540	-.304	-.201	-.700	.786	.229	.550	-.765	-.246	-.971	.273	11
2	-27.578	2.076	-.651	.042	-.001	.011	.360	.055	1.097	.376	-.767	.733	2.549	10
3	4.841	.180	.177	.966	.069	-1.250	-.313	-.590	-1.324	.334	1.498	1.896	-1.593	9
4	-7.683	-.345	1.488	-1.732	.798	-.676	-.246	.366	-2.071	-1.028	1.316	-1.293	-.930	8
5	2.911	-1.517	-.207	-1.450	-.276	-.574	1.348	1.429	1.718	.044	-2.044	-1.755	.159	7
6	2.402	.728	.448	3.438	.338	.334	.353	1.026	.542	.730	-1.450	3.041	2.446	6
7	-.118	2.006	-.329	.571	.942	1.050	-1.030	-.792	-3.522	-1.412	.997	.171	-2.044	5
8	-6.146	-.163	.340	-1.456	-.250	.292	1.329	.083	1.189	-3.085	-.229	-2.084	1.192	4
9	.428	-1.108	.841	.017	-.973	-.217	.606	-.324	-1.991	-.105	.413	1.428	.035	3
10	3.937	-.099	1.179	.166	.780	-.149	.338	.150	-.780	-.478	-.273	2.415	.932	2
11	.746	.459	-1.285	-.730	.885	-.218	-.092	.338	.184	-.329	-.155	-.824	.074	1
12	-1.671	.598	-.848	.602	-.102	.048	-.311	-.385	-.195	.363	.382	-.506	.284	
n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	

S_n^m

April 1982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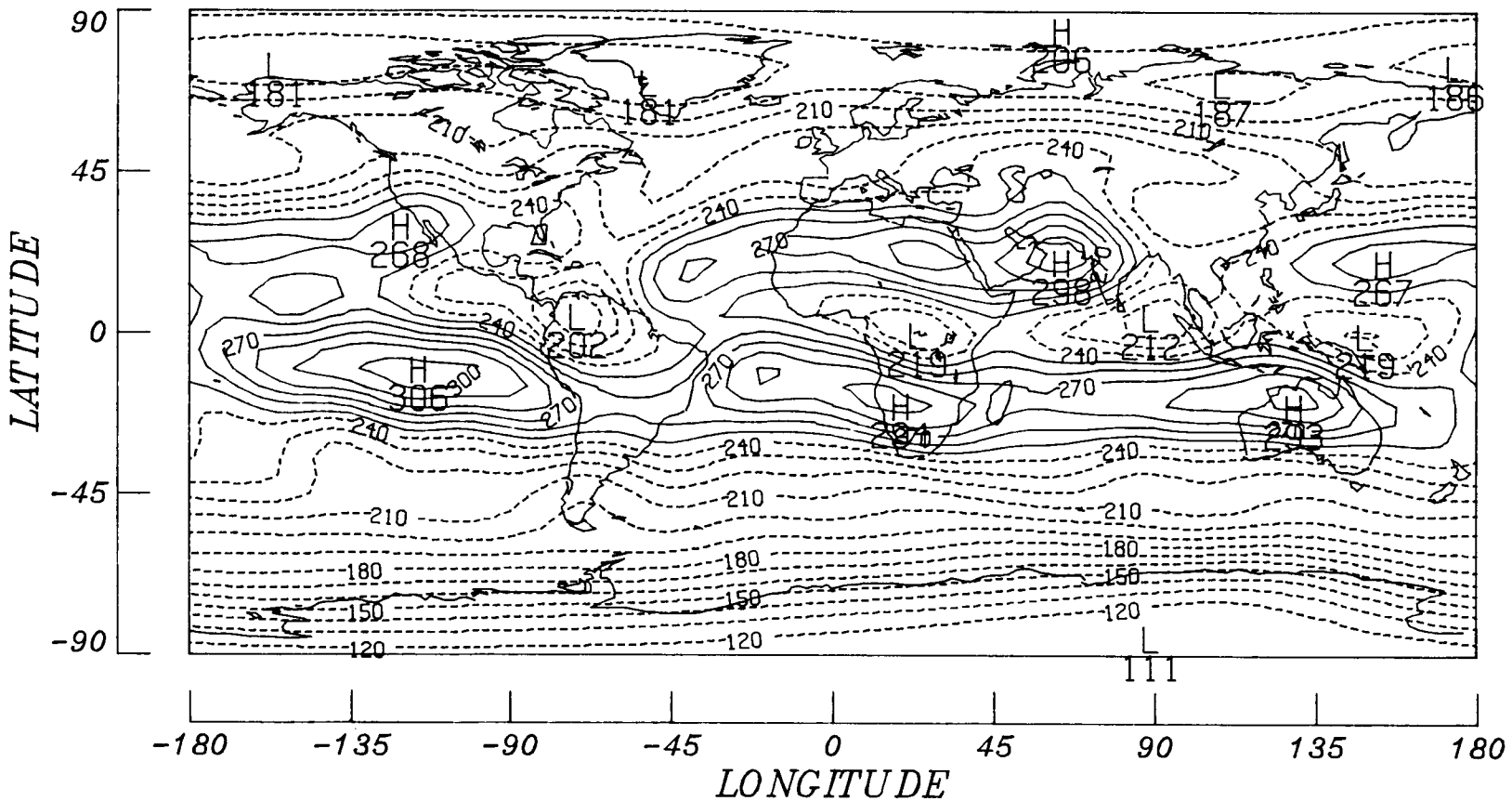
May 1982

C_n^m

n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	m/n
0	233.442	.207	-.425	-1.174	.766	-.177	-.300	.145	-.618	-.407	.743	-.225	.064	12
1	5.532	1.750	.394	-.069	.088	-.012	-.100	-.242	.582	-.716	.121	-1.235	1.612	11
2	-27.478	2.122	1.588	.073	-.817	.513	-.271	-.470	.652	.096	-.468	.641	1.564	10
3	7.159	.593	1.097	2.374	-.686	.421	.200	-.420	-.576	.417	1.299	1.295	-1.862	9
4	-6.160	.853	-1.002	-1.581	-1.613	.144	.556	.146	-.497	-.102	.242	-.357	-1.487	8
5	-1.828	-1.945	-2.806	-1.885	-1.181	-1.011	.943	-.061	.716	.343	-2.046	-.752	.887	7
6	3.353	-.541	.129	2.736	.449	.599	.566	.719	-.098	-.379	.582	.800	2.458	6
7	4.754	1.348	1.629	.724	.902	.602	.630	-.291	-2.196	-1.498	1.731	-.037	-3.140	5
8	-5.697	-.692	.799	-2.263	.176	.670	-.061	-.303	.286	-2.110	-.460	-.077	1.137	4
9	-1.804	-1.208	.003	-.168	-1.063	-.825	.318	-.614	-.350	.473	-.660	2.349	.870	3
10	3.921	.981	.933	1.349	-.048	-.419	.730	-.603	-1.052	.165	-.439	4.040	1.455	2
11	2.124	.884	-1.097	-.273	.788	.649	.073	.531	-.580	.126	.296	-.210	-.222	1
12	-.220	.215	-.783	.440	.587	.465	-.409	-.138	.102	-.335	.160	-.019	-.146	

S_n^m

May 1982

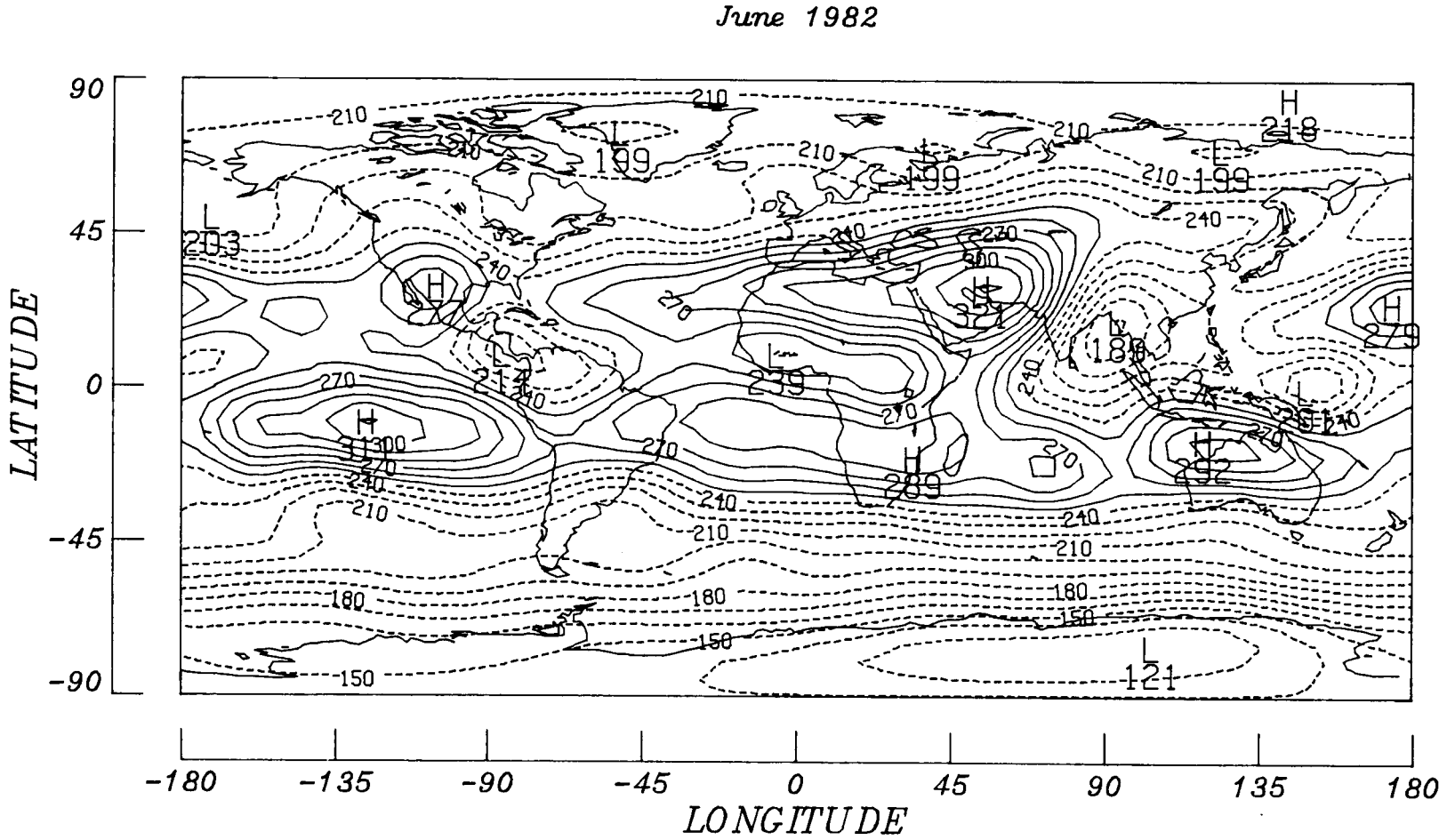


June 1982

C_n^m

		12	11	10	9	8	7	6	5	4	3	2	1	m/n
0	236.169	-.391	-.438	-.009	-.455	.025	-.439	.633	.068	-.741	.050	-.296	.076	12
1	10.240	4.914	.767	-.044	-.180	-.626	-.073	-.128	.704	.187	-.634	-.186	.389	11
2	-26.351	4.315	2.908	.008	.547	-.478	.075	-.107	.076	-.302	-.242	.899	2.088	10
3	7.805	-.780	1.425	.924	.368	.051	.198	.444	.332	-.239	1.421	.773	-.085	9
4	-5.690	-1.156	-1.607	-2.757	-3.364	-.212	.775	.928	-.274	.167	-.072	-.140	-1.655	8
5	-3.999	-2.247	-3.836	-1.867	-1.764	-1.865	1.069	.102	-.191	.152	-2.202	-.976	-.290	7
6	4.407	-1.165	-.705	3.499	1.227	-.699	1.797	.311	.069	-1.650	-.387	-.793	.632	6
7	6.186	.800	.995	1.484	.051	.676	2.134	.613	-2.753	-1.429	1.981	-.657	-4.604	5
8	-3.274	.504	1.474	-.640	.078	-.063	.481	.432	-.206	-2.081	.622	-.152	2.954	4
9	-3.639	.720	1.004	-.069	-.043	-.578	.860	.013	-.135	-.279	.844	3.519	3.098	3
10	2.552	.289	.349	-.113	-.536	.607	.241	-.183	-.991	-1.042	.128	7.156	.538	2
11	.937	-1.769	-.994	-.421	.397	.823	-.543	.336	.050	-.002	.633	-.104	-.786	1
12	.801	-.093	-.128	.165	1.641	.187	-.161	-.171	.668	.089	.602	-.036	-.629	
n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	

S_n^m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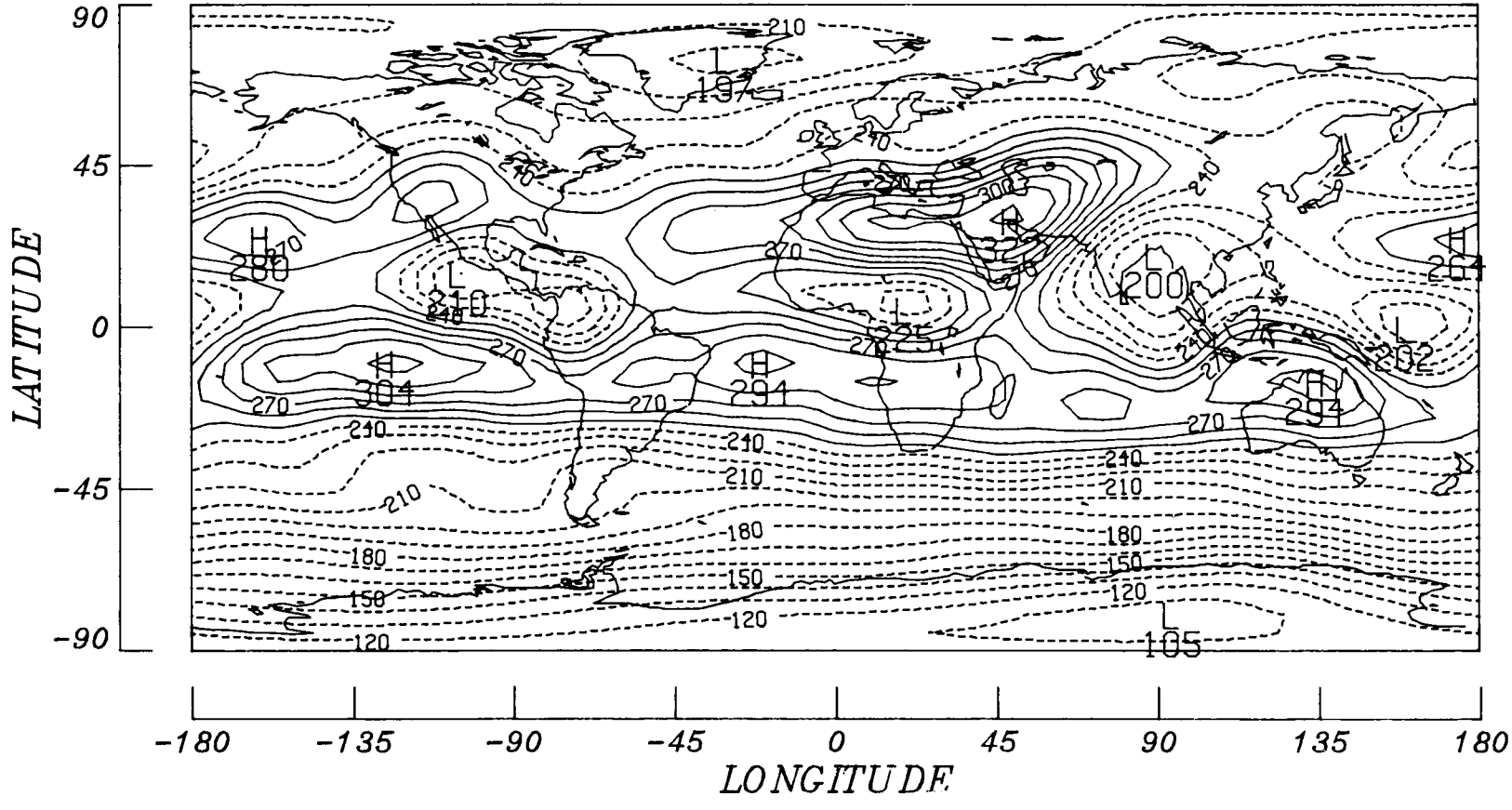
July 1982

C_n^m

		12	11	10	9	8	7	6	5	4	3	2	1	m/n
0	237.678	-.126	-.339	-.347	-.109	-.249	-.020	-.128	-.412	-.346	-.216	.066	-.286	12
1	12.856	4.668	1.088	-.030	.536	.343	.217	-.162	.894	.804	.069	-.293	-.414	11
2	-25.317	4.655	3.312	.319	.179	.914	-.370	.628	.462	.371	.791	1.456	1.617	10
3	10.454	-1.098	1.982	1.284	-.584	.761	.306	1.468	-.639	-.364	1.501	.835	.210	9
4	-8.041	-.451	-.858	-1.881	-4.931	.211	.483	.305	-.598	-1.010	-.350	-.313	-1.618	8
5	-5.275	-2.206	-3.688	-1.662	-1.797	-.476	.153	-.802	.257	-.788	-1.348	-1.358	.390	7
6	4.008	-1.836	-1.964	2.423	1.259	-.664	1.140	.633	-.228	-1.212	-.268	-.766	1.000	6
7	7.621	.509	1.338	1.726	.228	.625	.928	.656	-2.739	-.538	2.504	-.290	-3.628	5
8	-3.367	.502	2.052	-1.041	-.462	.128	-.093	.657	.451	.511	.404	1.599	3.774	4
9	-3.505	.375	.712	-.975	.048	.029	.502	.392	.162	.232	-.486	3.386	2.206	3
10	1.038	-.037	.045	.885	.326	.416	.417	.210	-.215	.291	-.251	4.817	.001	2
11	1.268	-1.256	-1.998	.331	-.378	.751	-.218	.533	-.766	.266	-.374	-.316	-.950	1
12	.770	.001	-.687	-.329	.171	.109	-.371	.420	.072	-.003	-.095	-.152	.005	
n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	

S_n^m

July 1982



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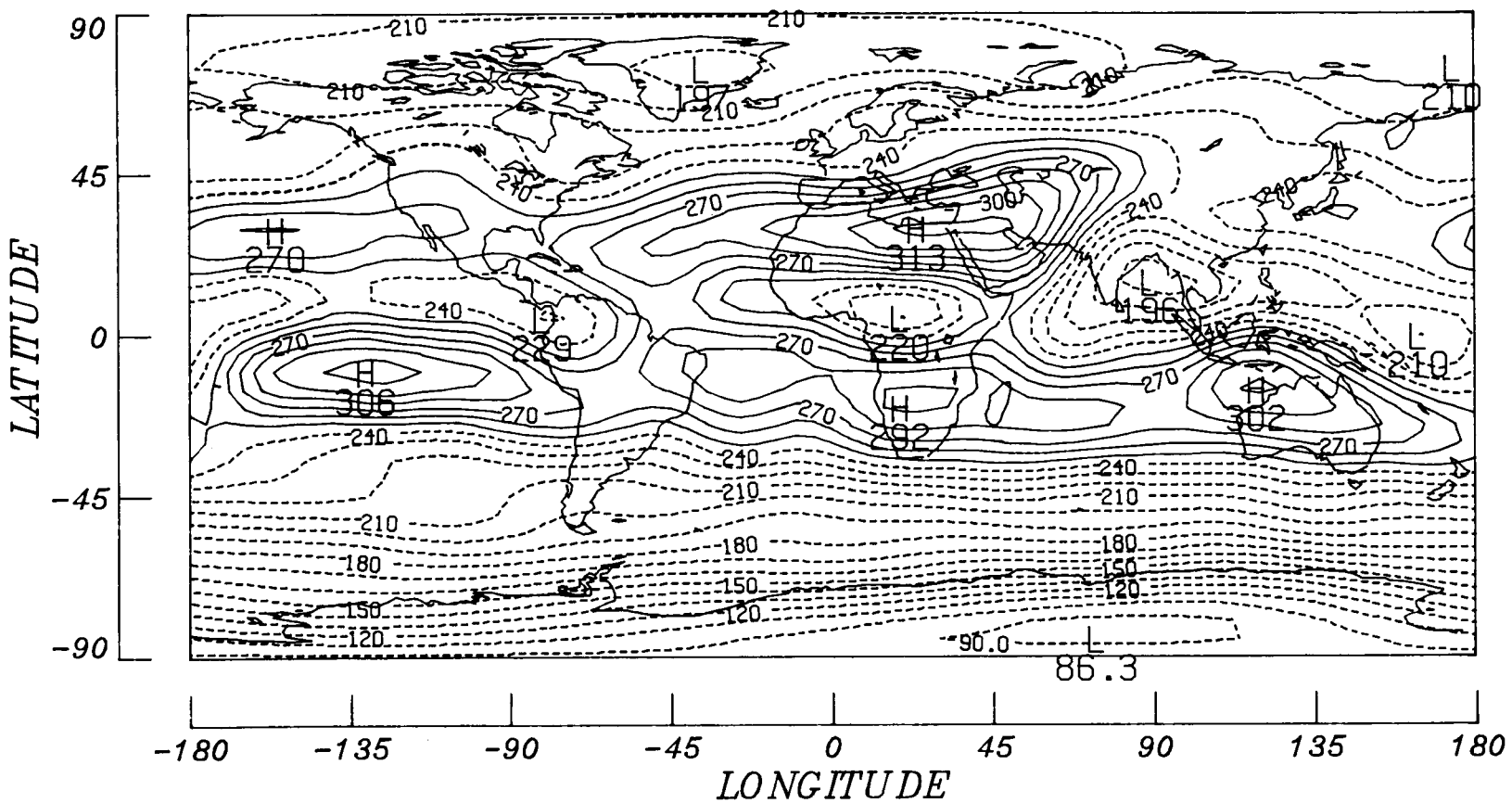
August 1982

C_n^m

		12	11	10	9	8	7	6	5	4	3	2	1	m/n
0	237.799	-.207	-.523	-.238	-.385	-.208	.053	.244	-.178	.501	.348	.324	-.202	12
1	12.664	4.800	-.051	-.224	.158	.124	-.288	-.379	.433	1.591	-.242	-.956	-.714	11
2	-25.819	4.577	1.740	.513	-.087	.757	-.203	.478	.654	.653	-.288	.121	1.919	10
3	10.799	-1.303	2.286	1.932	-.087	.027	.351	.543	-.338	-.712	1.610	.873	-.092	9
4	-10.324	-1.354	.665	-2.165	-4.555	-.155	.005	.068	-.830	-1.014	.511	-.102	-.598	8
5	-5.119	-2.046	-2.843	-2.103	-1.246	-1.074	.062	-.536	-.148	-.243	-1.854	-1.430	.288	7
6	3.581	-1.094	-2.483	2.662	.247	-.846	.332	-.126	-.276	-.980	-.481	-.086	.194	6
7	7.717	.939	.823	1.799	-.212	.196	1.451	.754	-1.983	-.596	2.197	.055	-4.406	5
8	-3.430	.611	1.355	-2.132	-.238	.087	.120	1.055	.473	.459	.495	1.579	5.277	4
9	-3.187	-.628	.359	-.608	.673	-.455	-.488	-.333	.523	.182	.284	2.382	2.722	3
10	.122	.302	1.052	1.718	.484	.111	-.089	-.009	-.662	-.416	-.206	2.831	-1.256	2
11	1.525	-.840	-.957	.484	-.153	.254	.124	.083	-.404	-.617	.165	-.307	-1.535	1
12	1.107	.206	-.506	-.370	.482	-.450	.090	-.269	.447	.081	.048	-.228	.020	
n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	

S_n^m

August 1982



LATITUDE
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LONGITUDE
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L 197
H 313
L 220
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L 196
H 302
L 210
L 86.3
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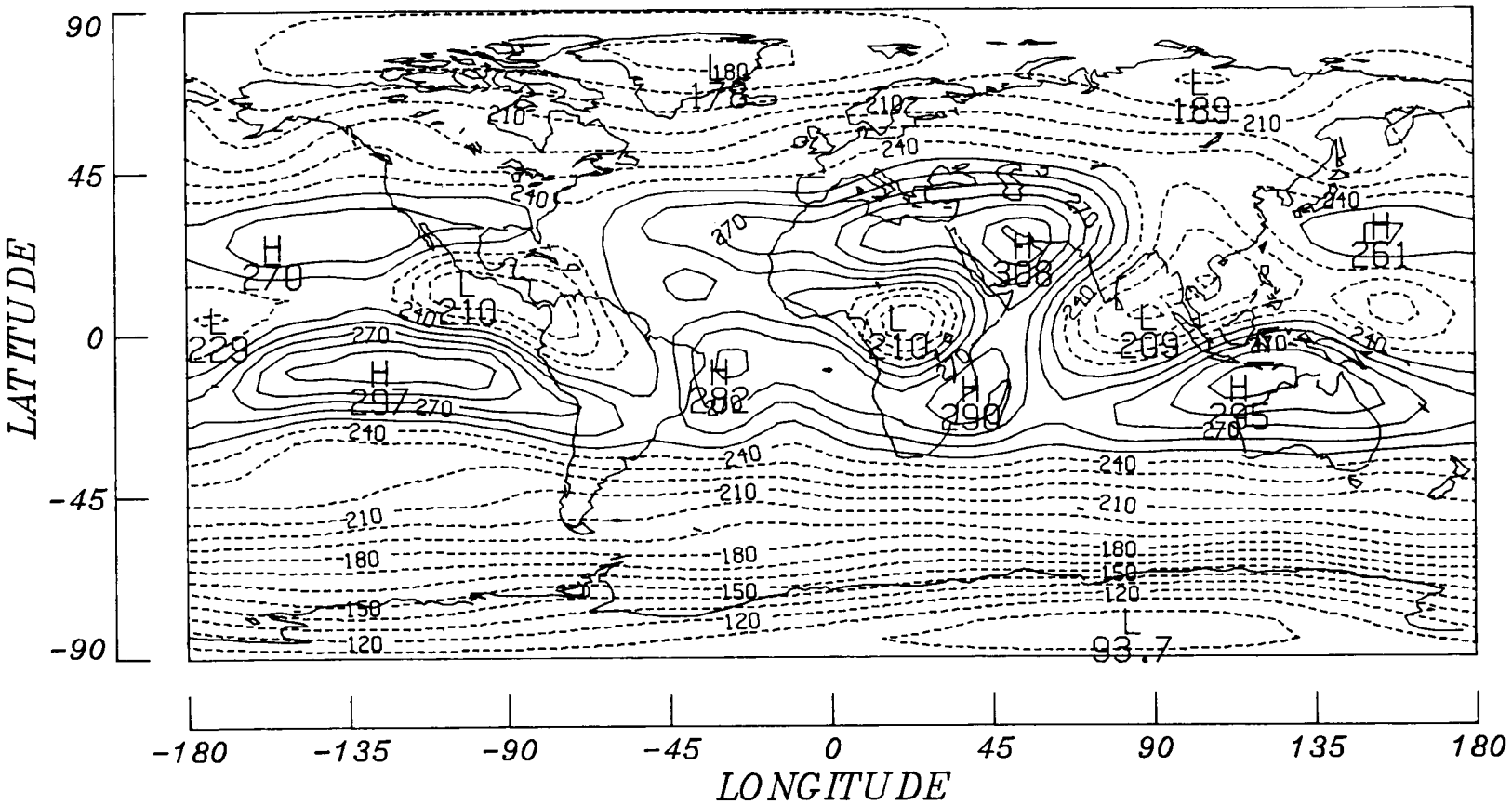
September 1982

C_n^m

		12	11	10	9	8	7	6	5	4	3	2	1	m/n
0	235.058	-.349	.006	.165	-.179	-.481	-.175	-.457	-.164	-1.082	.319	.558	.409	12
1	9.097	2.632	.972	-.239	-.062	-.239	.331	-.544	.756	-.458	.116	-1.107	.320	11
2	-27.838	3.989	2.580	.556	-.128	.217	.628	-.333	.824	.324	.866	-.176	1.372	10
3	8.066	-.582	2.010	1.163	.644	.014	.228	-.079	-.557	.391	1.028	1.132	-1.126	9
4	-10.328	-1.472	.118	-1.854	-4.703	.322	.437	.721	-.469	-.577	-.002	.301	-.204	8
5	-3.628	-2.185	-2.147	-1.987	-1.836	-.491	.089	.300	1.489	.122	-1.224	-.542	.653	7
6	3.220	.355	-.503	2.577	.880	1.147	.894	-.791	-.179	.577	1.106	-.230	1.499	6
7	6.554	.552	.892	1.784	.382	.456	1.427	1.189	-2.857	-1.626	1.621	-.916	-2.910	5
8	-3.408	-1.347	1.158	-1.729	-.509	-.674	-.532	.063	1.102	-1.582	.109	.728	2.022	4
9	-3.194	-.308	-.112	-1.112	.057	-.788	-.915	-.875	.027	.179	.215	3.757	.876	3
10	.735	.855	.186	1.550	.854	-.074	.793	.086	-.767	-.649	-.245	3.318	.004	2
11	1.448	-.709	-.737	-.056	-.107	.470	.700	.242	-.317	.024	-.901	.135	.875	1
12	.889	.251	-.052	-1.226	-.303	.184	-.203	-.464	.449	.225	-.229	-.361	.282	
n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	

S_n^m

September 1982



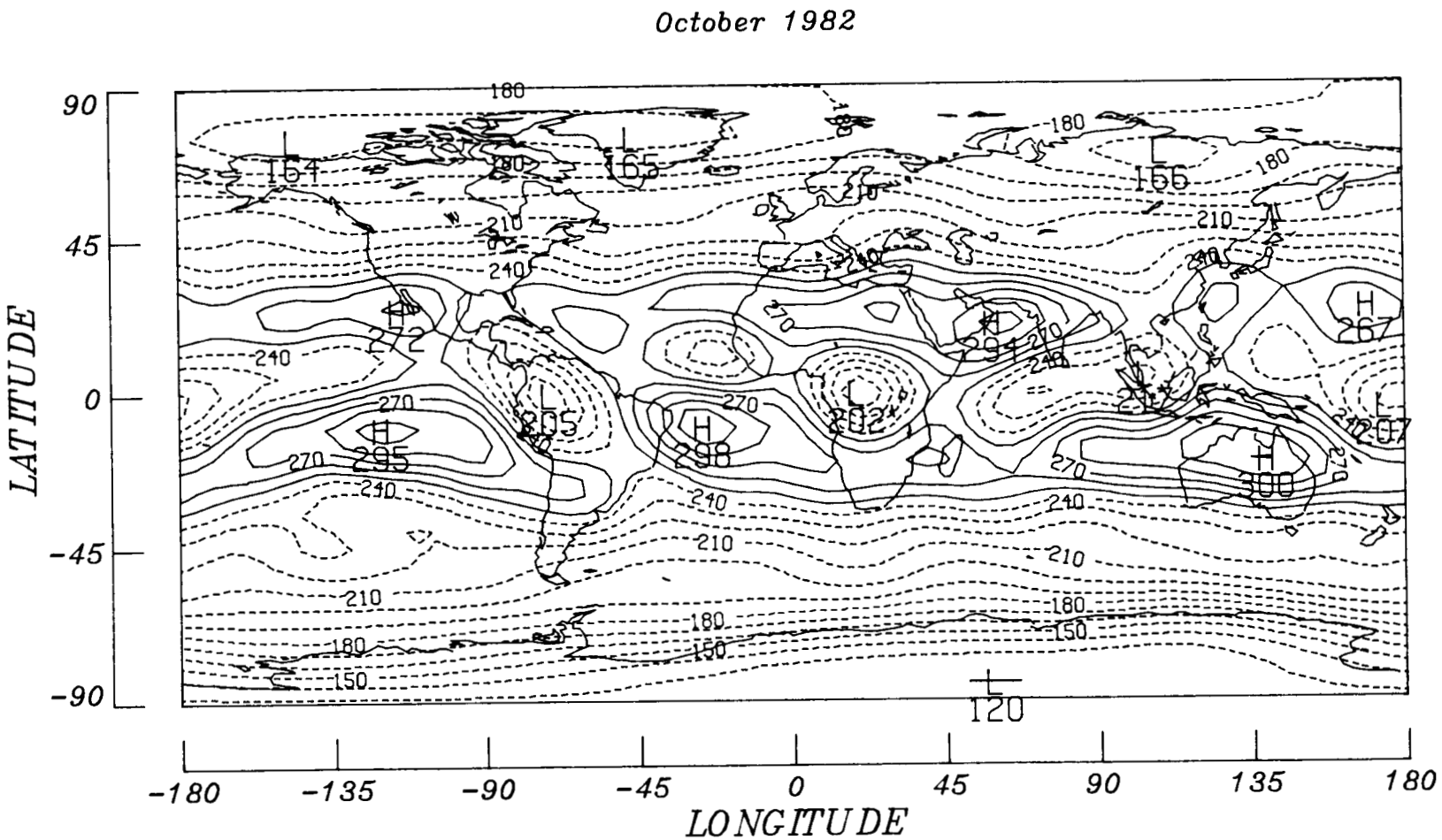
October 1982

C_n^m

		12	11	10	9	8	7	6	5	4	3	2	1	m/n
0	232.772	.350	-.705	-.452	.064	-.127	-.313	.229	.102	-.919	1.439	.772	-.208	12
1	1.426	.297	-.003	-.562	.324	.069	.058	.001	.728	-.694	.397	-.716	1.184	11
2	-27.591	3.020	.032	.576	.330	.003	-.430	-.245	.349	.502	-.850	-.669	1.912	10
3	3.274	-1.357	.535	3.273	.480	-.984	-.003	-.323	-.393	1.259	.344	.274	-1.492	9
4	-8.683	.204	1.294	-1.999	-2.474	-1.068	.689	-.354	-1.334	-.783	1.071	.869	-.253	8
5	-.598	.027	-.167	-1.973	-.787	-.457	-.351	.363	.774	-.527	-.913	.503	1.161	7
6	4.795	1.200	.113	2.623	1.354	-.445	.102	.665	.973	2.070	-.240	.385	1.659	6
7	4.544	.166	.503	1.404	-.067	.874	1.799	1.594	-2.080	-.421	2.013	-1.595	-2.731	5
8	-5.922	-.611	.570	-3.008	-.799	-.631	.333	.073	1.015	-2.638	.061	.373	1.224	4
9	-1.371	-.064	-.288	-.745	.490	-.750	-1.893	-1.272	-.531	1.210	.765	2.144	-.666	3
10	2.751	-.051	.489	1.974	1.098	.209	-.236	-.611	-1.106	-.033	-.537	.310	.361	2
11	1.204	-.793	-.281	-.430	-.373	.267	.741	.122	-.041	-.686	.184	.306	.597	1
12	.608	.573	-.635	-.327	-.161	.104	-.264	.621	.402	.805	.133	.357	.723	
n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	

S_n^m

October 1982



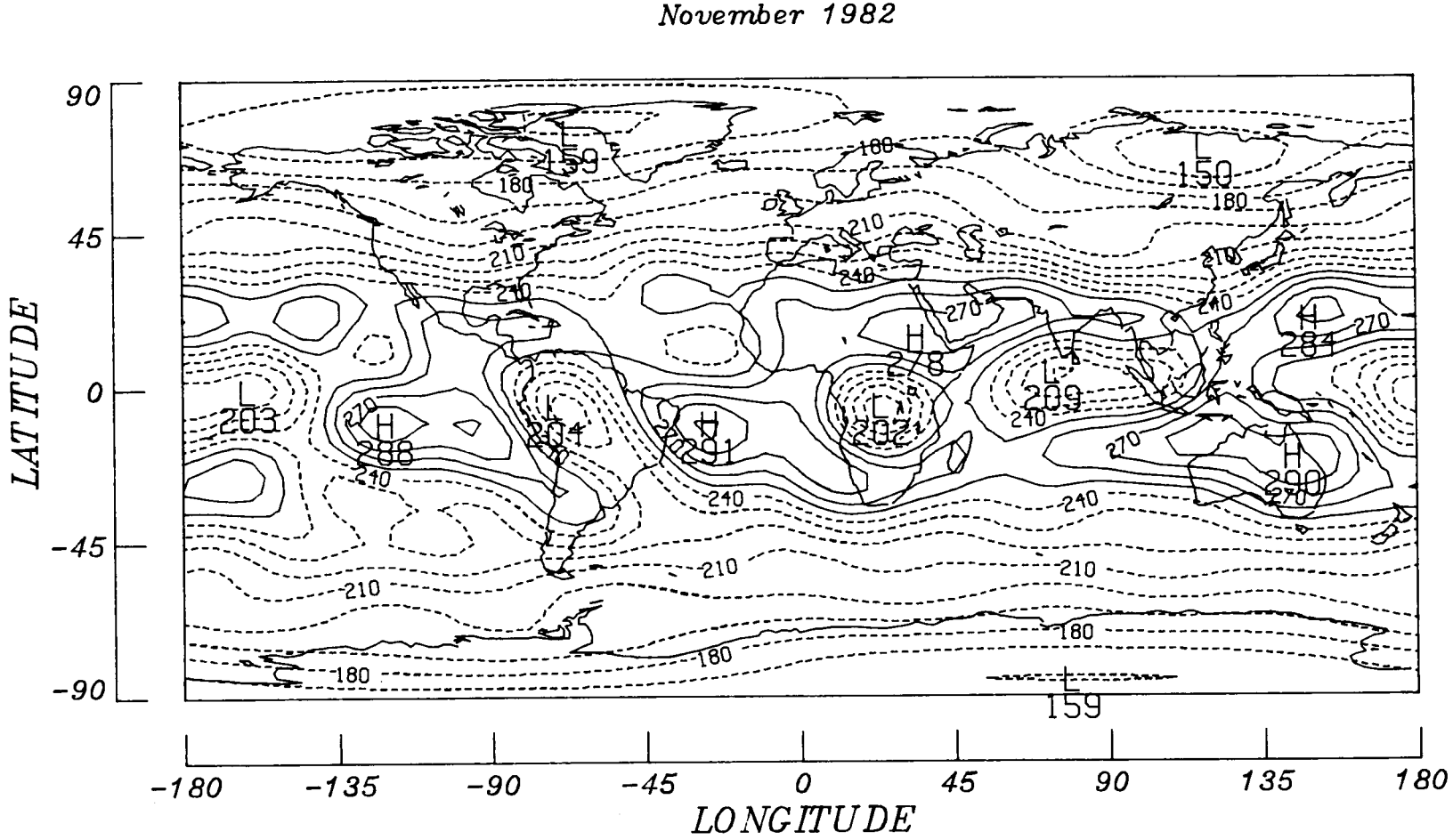
November 1982

C_n^m

		12	11	10	9	8	7	6	5	4	3	2	1	m/n
0	230.849	.561	-1.046	-.202	-.631	-.519	-.616	-.426	.240	-.891	.867	.042	.411	12
1	-5.456	.617	-.144	-.577	.039	.589	.331	.306	-.365	-2.061	.337	.056	.649	11
2	-25.506	1.911	1.194	.953	-.219	.719	.261	.025	.269	.072	-1.254	-.309	1.328	10
3	-.393	-.846	1.737	3.952	.007	-.878	-.505	-.570	-.111	2.442	.373	.142	-1.902	9
4	-4.950	.629	2.601	-1.985	-1.267	.449	.371	.132	-.957	-.366	1.706	.820	-.088	8
5	1.653	1.432	.606	-3.478	-.952	-.147	.427	-.253	.950	-1.797	-.770	1.025	1.935	7
6	5.531	.089	-1.252	1.868	.694	-.091	-.500	-.320	1.022	1.872	-1.581	.258	.768	6
7	.607	-.888	.679	1.925	-.099	1.387	.295	1.296	-1.809	.347	-.175	-1.054	-1.838	5
8	-4.740	-.117	.737	-2.018	-1.485	-.962	-.776	.494	1.469	-3.131	.161	1.516	1.194	4
9	-.166	.754	-.925	-.879	.417	-.868	-.181	-.528	.543	1.022	2.931	1.960	-.768	3
10	3.416	.414	.902	.520	1.572	.441	.696	-.165	-1.413	-1.180	-.188	-1.011	-.639	2
11	1.541	-1.020	.674	-.603	-.108	-.130	.288	.219	.520	-.377	.691	.260	.223	1
12	-.448	-.842	-1.049	.054	-.218	.090	-.829	-.224	.220	1.080	.863	-.001	.123	
n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	

S_n^m

November 1982



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December 1982

C_n^m

n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	m/n
0	231.320	.484	.368	.204	.536	-.837	.335	-.443	.467	-.111	.728	.164	-.242	12
1	-8.294	.517	-.287	-1.494	-.356	.301	-.181	.071	.328	-.993	.685	.366	.594	11
2	-24.202	.606	2.890	.206	-.565	.245	-.011	.585	.442	-.013	-.955	-.488	2.558	10
3	-3.517	-.728	1.433	1.247	.414	-1.029	-.014	-.644	-.641	1.866	-1.190	-.267	-1.527	9
4	-4.164	1.248	.584	-1.824	1.619	.828	-.332	-.896	-2.052	-1.205	1.585	1.666	-1.578	8
5	3.518	.611	1.260	-1.341	-1.447	-.538	-.887	.380	1.108	-2.140	.599	1.059	.899	7
6	7.386	-.400	.860	2.540	-.742	-.044	.119	-1.239	1.725	2.122	-1.809	-.050	2.133	6
7	-2.332	-1.321	-.036	.813	.813	1.734	.288	.455	-2.695	.014	-1.458	.284	-.736	5
8	-5.840	-.557	.079	-1.976	-.795	-.710	.392	-.353	1.711	-1.925	-.964	1.352	-.152	4
9	1.904	2.105	-.691	-.703	.313	-1.167	-.109	-.838	.007	1.695	3.152	1.151	-.685	3
10	2.649	.940	.556	.641	1.566	.750	.902	-.060	-1.457	-.263	-.579	.211	-.258	2
11	.897	-2.172	1.016	.064	-.217	.642	-.161	.417	.274	-.523	-.125	.671	-.419	1
12	-1.034	-.639	-.321	.252	-.326	-.071	-.868	.083	.646	.838	.414	-.586	.445	

S_n^m

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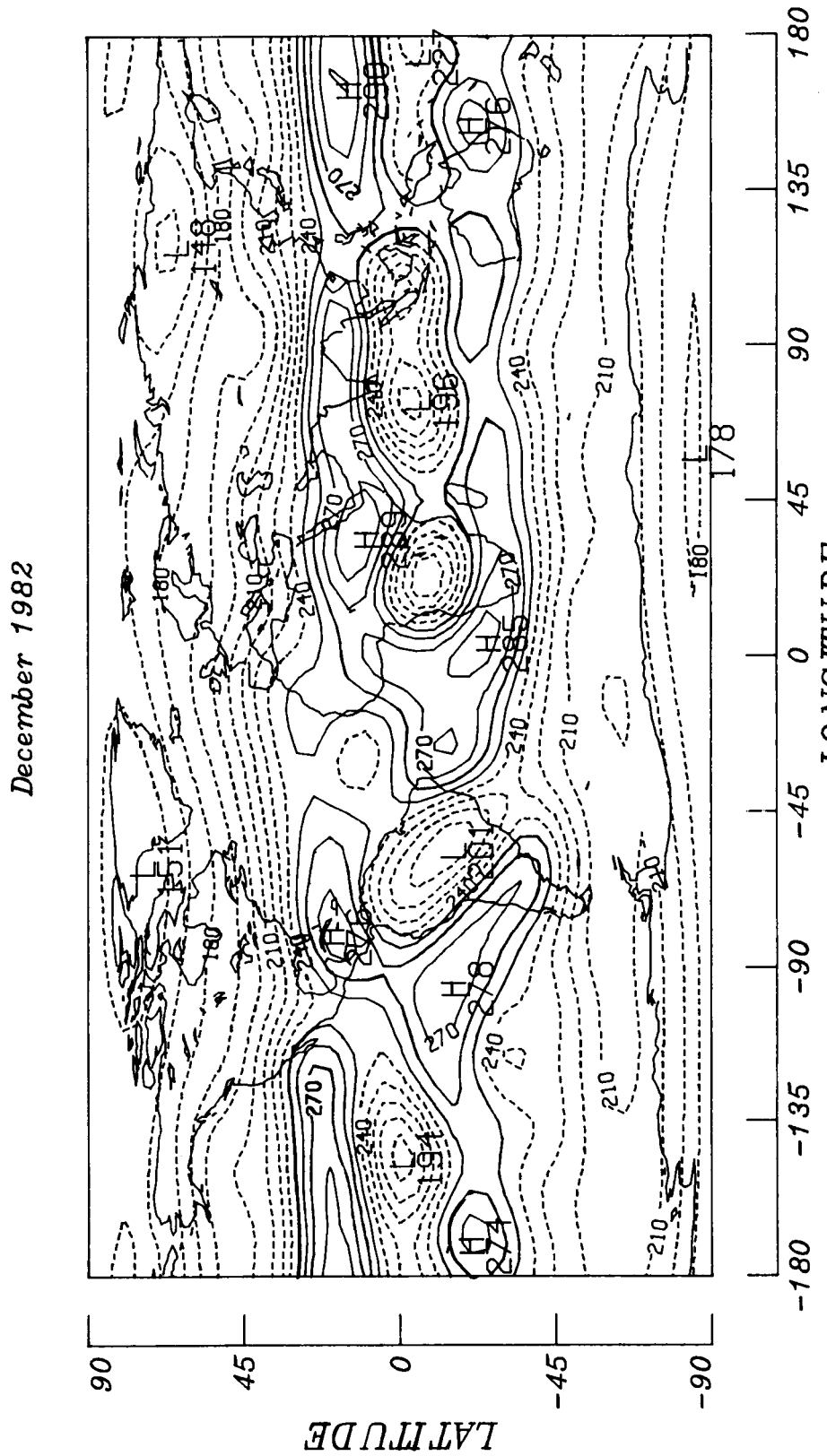

January 1983

C_n^m

		12	11	10	9	8	7	6	5	4	3	2	1	m/n
0	231.515	.573	.371	.087	.191	-.333	-.005	-.245	.860	.565	.974	-.326	-.210	12
1	-8.945	1.070	-.332	-.503	-.009	.354	-.150	.072	-.466	-1.255	1.251	-.396	-.036	11
2	-25.805	.194	.668	-.221	-.526	.662	.516	-.036	.026	-.314	-.640	-.096	1.953	10
3	-4.449	-2.760	2.789	1.720	.458	-.386	.796	-.830	-.104	1.671	-.991	1.162	-.805	9
4	-3.367	1.359	2.945	-2.406	1.274	.623	.032	.343	-1.326	-.948	0.000	1.823	-1.312	8
5	6.192	2.721	.043	-.486	-1.763	.876	-.324	1.162	.717	-1.610	.200	-.343	1.350	7
6	5.851	-.816	-.532	4.014	-.556	.156	-.211	-.140	1.994	2.315	.185	-.302	1.924	6
7	-5.362	-3.459	.528	.601	1.576	1.210	.731	.327	-1.724	-.388	-.648	.344	-1.048	5
8	-4.766	.327	.569	-2.751	-.412	-.163	.181	.240	1.775	-2.257	-1.330	1.883	1.425	4
9	4.790	3.127	-1.323	-1.010	.102	-1.003	-.031	-.491	-.330	.660	2.366	1.230	-.840	3
10	2.200	.301	.873	.520	1.486	.183	.163	.156	.058	-.203	.129	-1.008	-.745	2
11	-.903	-2.075	.686	.138	-.725	.661	-.527	.004	-.051	-.014	-.391	.335	.246	1
12	-.846	.385	-.602	.329	-.612	-.237	-.402	-.299	.361	-.334	.817	.336	1.004	
n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	

S_n^m

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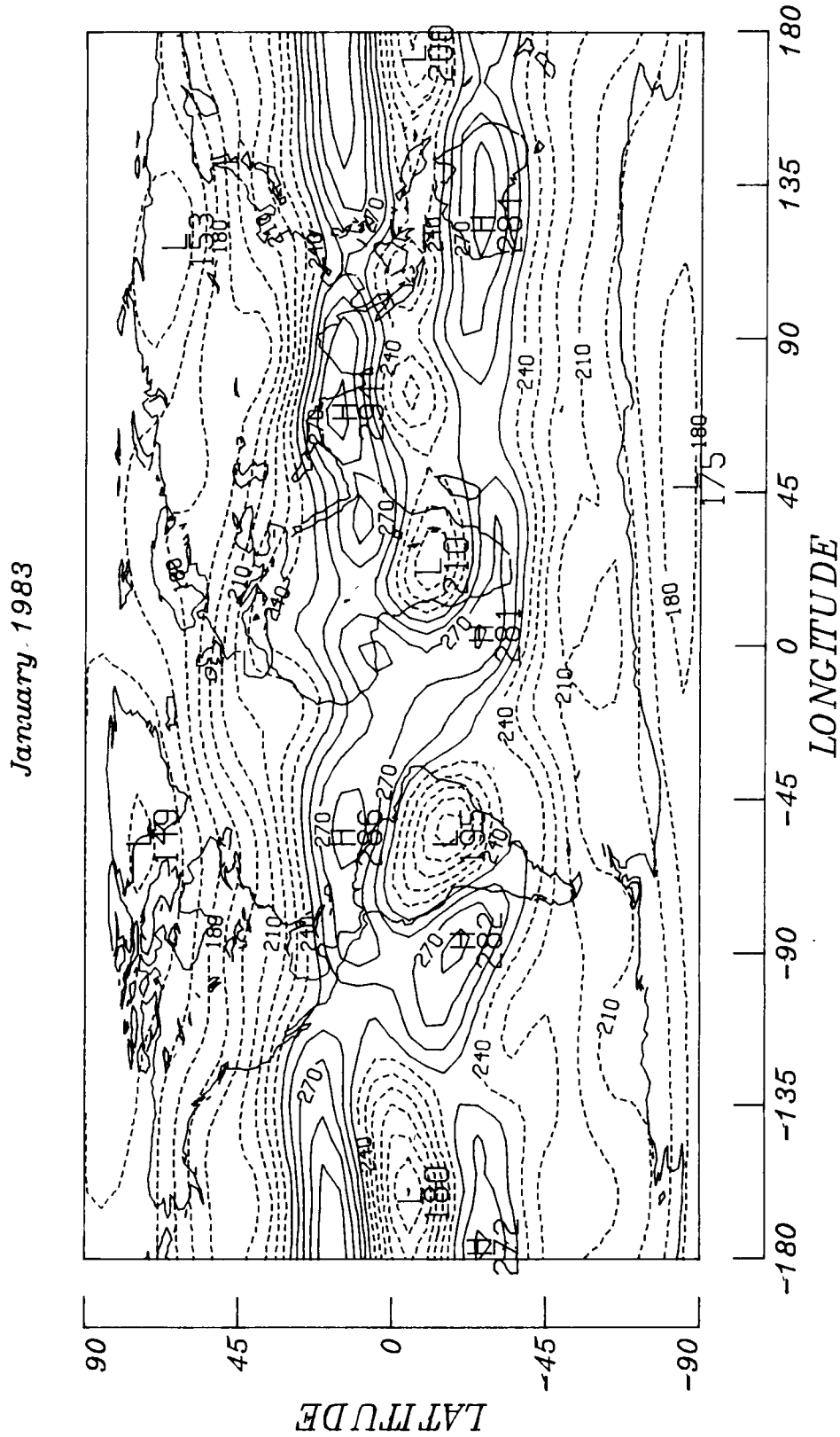


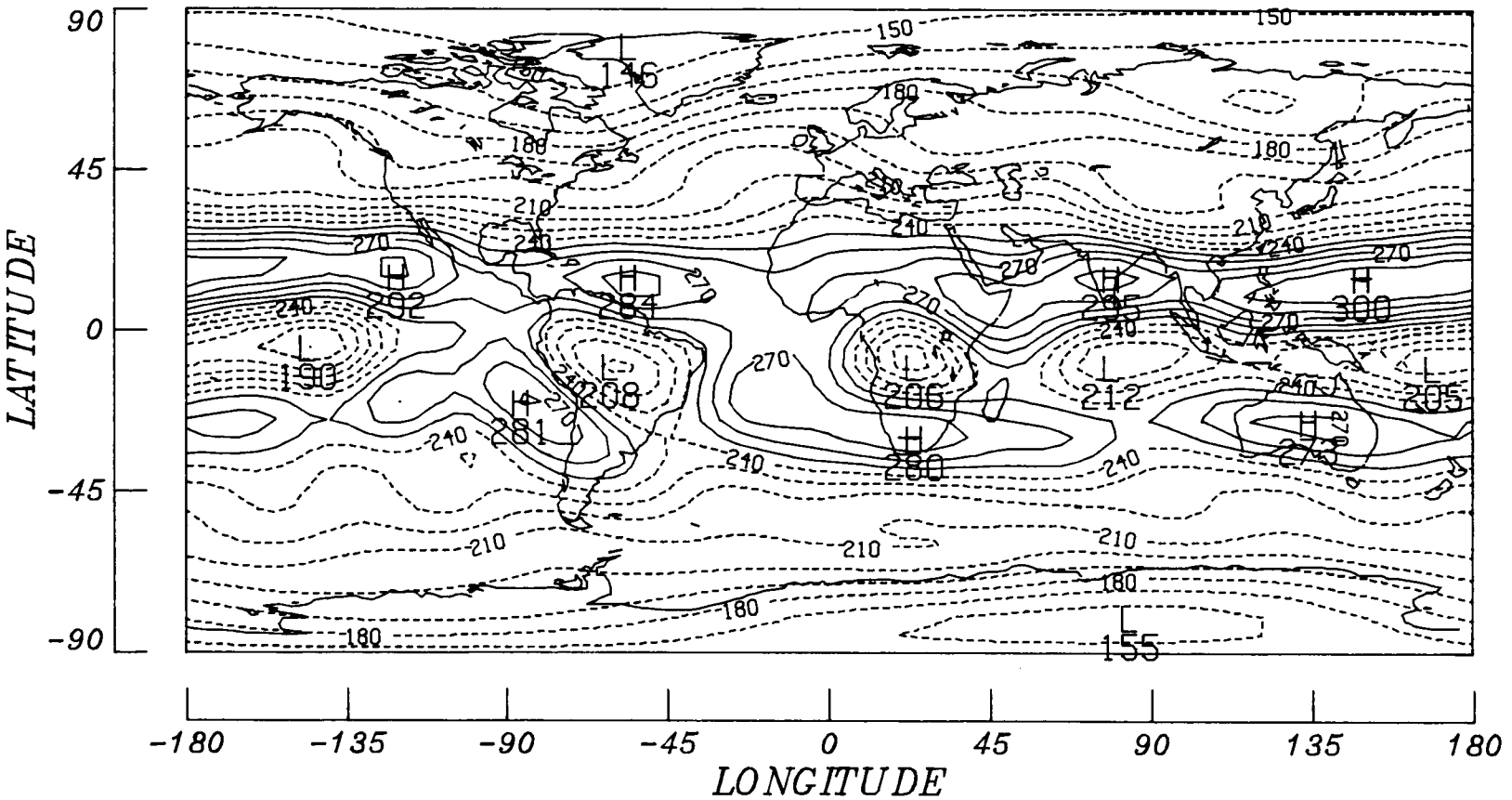
February 1983

C_n^m

		12	11	10	9	8	7	6	5	4	3	2	1	m/n
0	280.867	.053	.115	-.378	.094	-.378	.298	.137	-.019	-.142	.492	-.350	-.359	12
1	-7.613	1.663	.697	.117	.112	.342	.290	-.025	.434	-.982	1.374	-.940	-1.071	11
2	-26.893	-.499	1.253	-.075	0.000	.199	.570	-.127	.838	.304	-.305	-.147	2.559	10
3	-3.376	-1.310	1.669	1.162	-.181	-1.065	-.156	-.852	-.716	.995	-1.056	1.251	.396	9
4	-4.132	2.494	2.570	-1.404	.289	.760	.134	.100	-2.376	-1.218	.145	1.720	-1.112	8
5	7.727	.763	.577	-1.182	-.886	-.411	-.713	1.204	.976	-1.126	-.793	-.111	-.614	7
6	4.256	-2.015	-.556	2.318	.267	-.137	1.164	-.681	2.003	1.358	-.511	-.674	2.602	6
7	-6.779	-2.042	.536	.176	1.239	1.490	.324	.291	-2.678	-.638	-.682	-.103	-.100	5
8	-5.901	.853	1.331	-1.610	-.028	-.567	-.093	.298	.434	-2.756	-1.408	1.772	.418	4
9	5.537	1.954	-.540	.899	-.467	-.615	-.228	-.831	.164	1.247	2.017	1.208	-.913	3
10	2.816	-.369	.548	.437	.647	.476	.386	.195	-.993	-.187	-.170	.042	.938	2
11	-2.048	-1.728	.046	-.499	.384	-.102	-.038	1.091	.510	-.101	.265	-.348	.094	1
12	-.945	.341	-.818	.851	-.222	.097	-.698	-.691	.213	-.076	.173	.062	.575	
n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	

S_n^m

February 1983



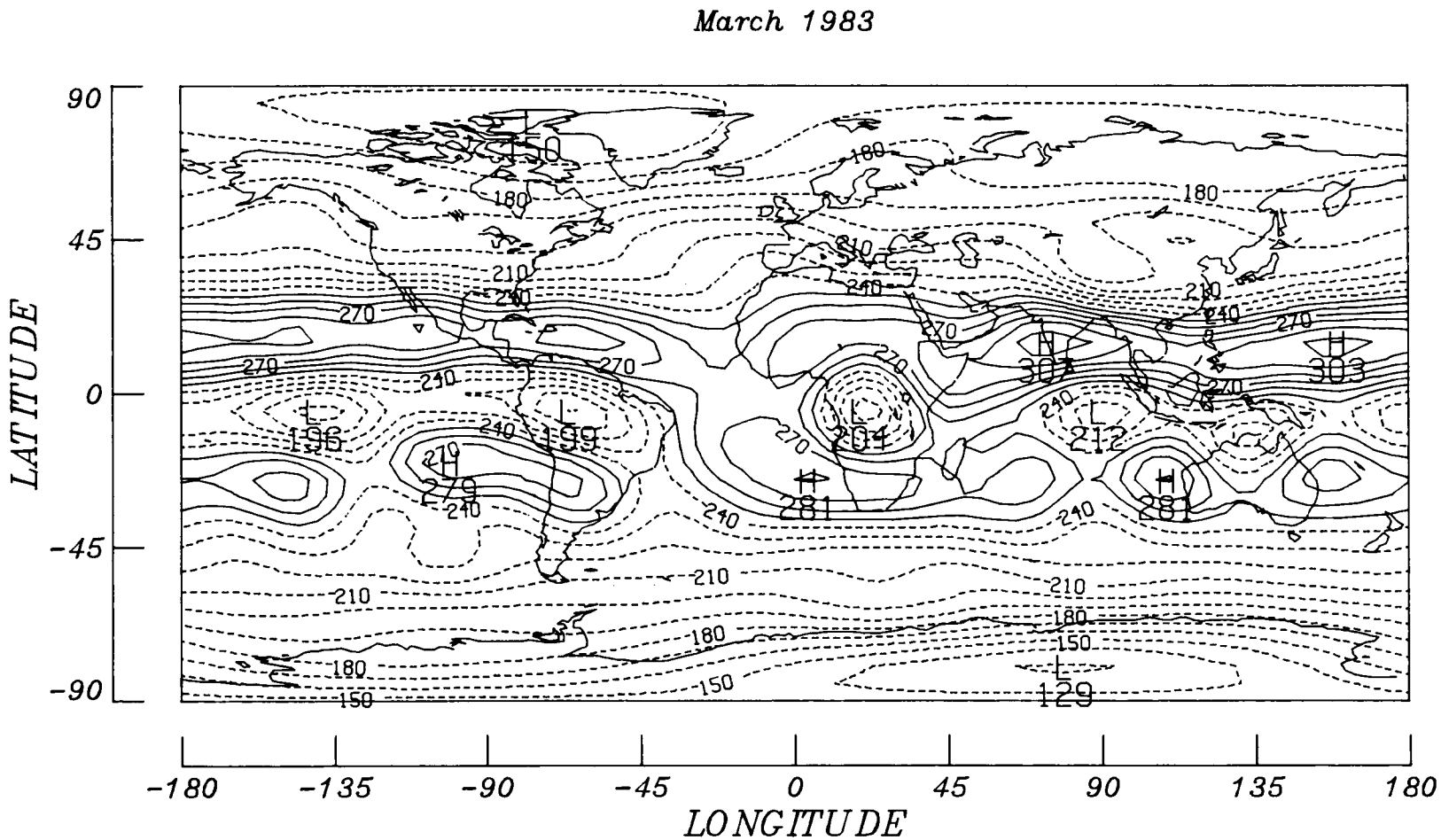
March 1983

C_n^m

		12	11	10	9	8	7	6	5	4	3	2	1	m/n
0	231.834	.685	-.250	.122	-.213	-.133	.144	.211	-.131	.329	.211	-.261	.455	12
1	-4.301	.739	.342	-.375	-.349	.508	.225	-.108	1.006	-1.019	.363	-.300	-.875	11
2	-28.502	.047	2.063	.342	.405	-.610	.152	-.216	.617	.555	.326	.010	2.259	10
3	-.972	-.831	.642	-.517	-.235	-.035	.489	-.697	-1.344	1.386	.371	.955	1.023	9
4	-5.220	2.018	.764	-.846	1.070	-.402	-.453	-.053	-1.805	-1.442	-.384	1.996	-.345	8
5	8.206	-.186	1.028	.314	-1.171	.310	.210	1.478	1.102	-.637	-1.060	-.070	-2.246	7
6	4.285	-2.641	.264	1.343	.416	.377	1.064	-.914	1.267	2.202	-.373	-1.266	2.666	6
7	-6.148	-1.129	-.638	.383	1.003	1.226	.492	1.973	-1.998	-.509	-.170	-.541	1.210	5
8	-6.264	1.556	-.389	-.613	-1.299	-.869	-.131	-.931	-.480	-2.515	-.901	1.365	1.578	4
9	5.339	1.255	.028	-.212	-.814	-.863	-.178	.188	.966	1.198	1.029	1.120	-2.537	3
10	3.927	-.094	1.771	.377	1.615	.656	.713	.133	-1.262	-.023	.967	.763	.272	2
11	-1.855	-1.070	.120	-.202	.314	.026	.120	.084	-.122	-1.043	-.239	.214	1.951	1
12	-1.228	.608	-.776	.213	-.931	-.098	-.926	.268	.578	.498	.724	.029	-.017	
n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	

S_n^m

March 1983



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L 204
H 281
H 307
L 212
H 281
H 303
L 129
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270
150

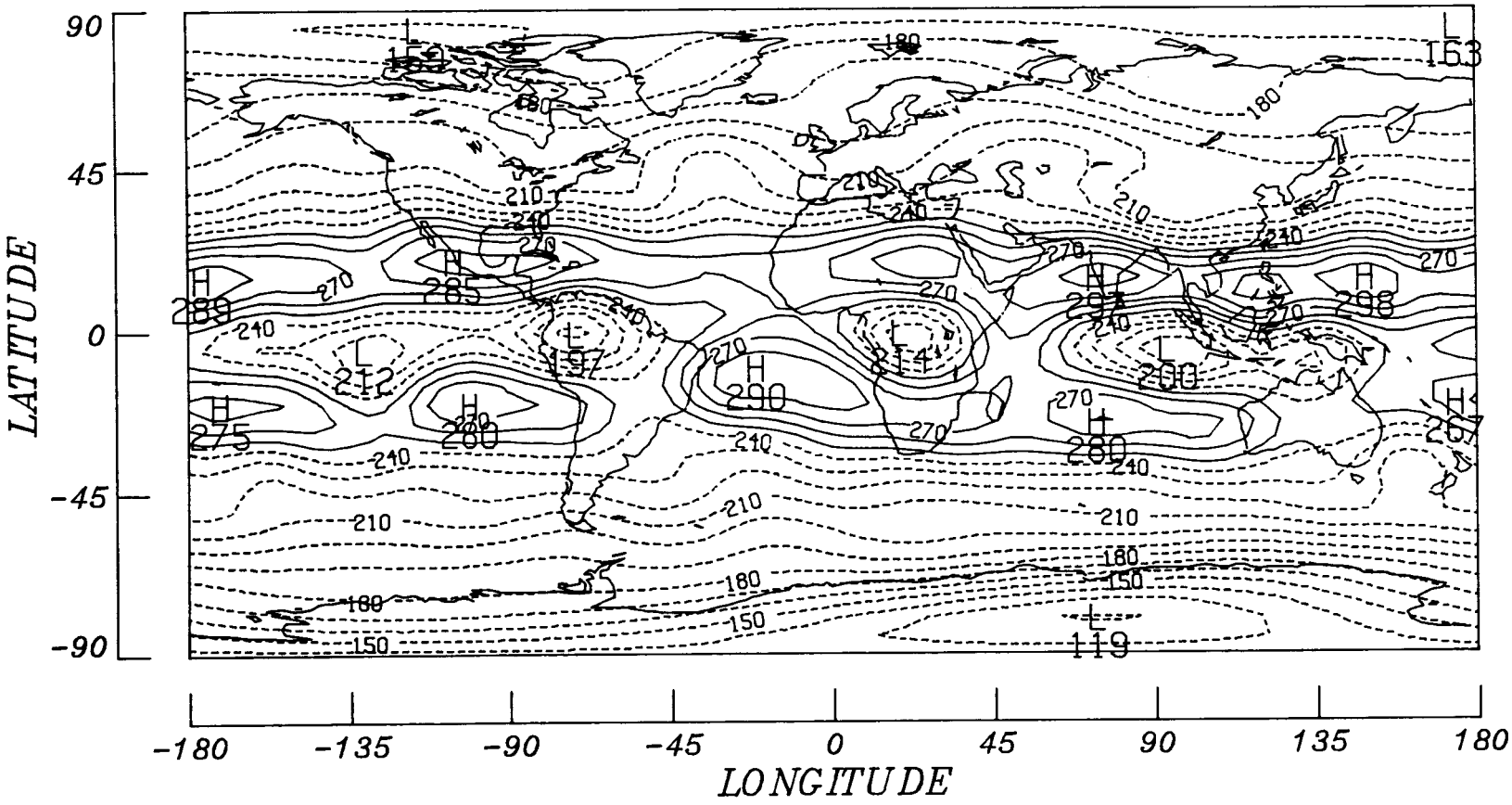
April 1983

C_n^m

		12	11	10	9	8	7	6	5	4	3	2	1	m/n
0	231.794	.240	-.076	-.133	.624	.093	.015	.789	-.335	-.024	.005	-.666	-.324	12
1	-.269	1.541	-.124	-.220	-.043	.040	.454	-.250	.315	-.591	.172	.280	-.376	11
2	-28.259	.237	2.261	.831	-.469	.519	.036	-.514	.320	.286	.853	-.030	3.142	10
3	1.270	.142	.203	-.561	-.250	.041	-.547	-.348	-.628	.871	.817	-.286	.120	9
4	-4.800	2.616	-1.850	-.135	.587	-.593	-.044	.844	-1.041	-1.735	-.465	1.770	-1.570	8
5	5.156	-.501	.946	.019	-1.732	-.515	.698	.632	1.013	-1.529	-.897	-.089	-2.066	7
6	4.116	-2.122	2.161	-.306	-.162	.437	.213	.142	.644	1.743	-.790	-1.182	3.441	6
7	-3.378	.295	-1.762	-.651	.204	.285	-.267	1.076	-2.779	-.521	.106	1.141	.216	5
8	-7.563	1.679	-.129	.445	-1.733	-.456	-.688	-.489	-.105	-2.957	.917	1.710	.928	4
9	2.847	-.151	1.515	-.095	-.382	-.701	-.465	-.847	-.197	.497	.624	.570	-1.914	3
10	4.602	-.928	.920	.089	1.258	.140	.686	.360	-.580	-.056	.352	1.770	.043	2
11	-1.202	-.353	-.186	.371	-.105	.123	-.028	.631	-.875	-.166	-.320	-.821	1.320	1
12	-1.849	1.639	.303	.265	-.723	.215	-.545	-.077	.559	.442	.939	-.213	.436	
n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	

S_n^m

April 1983



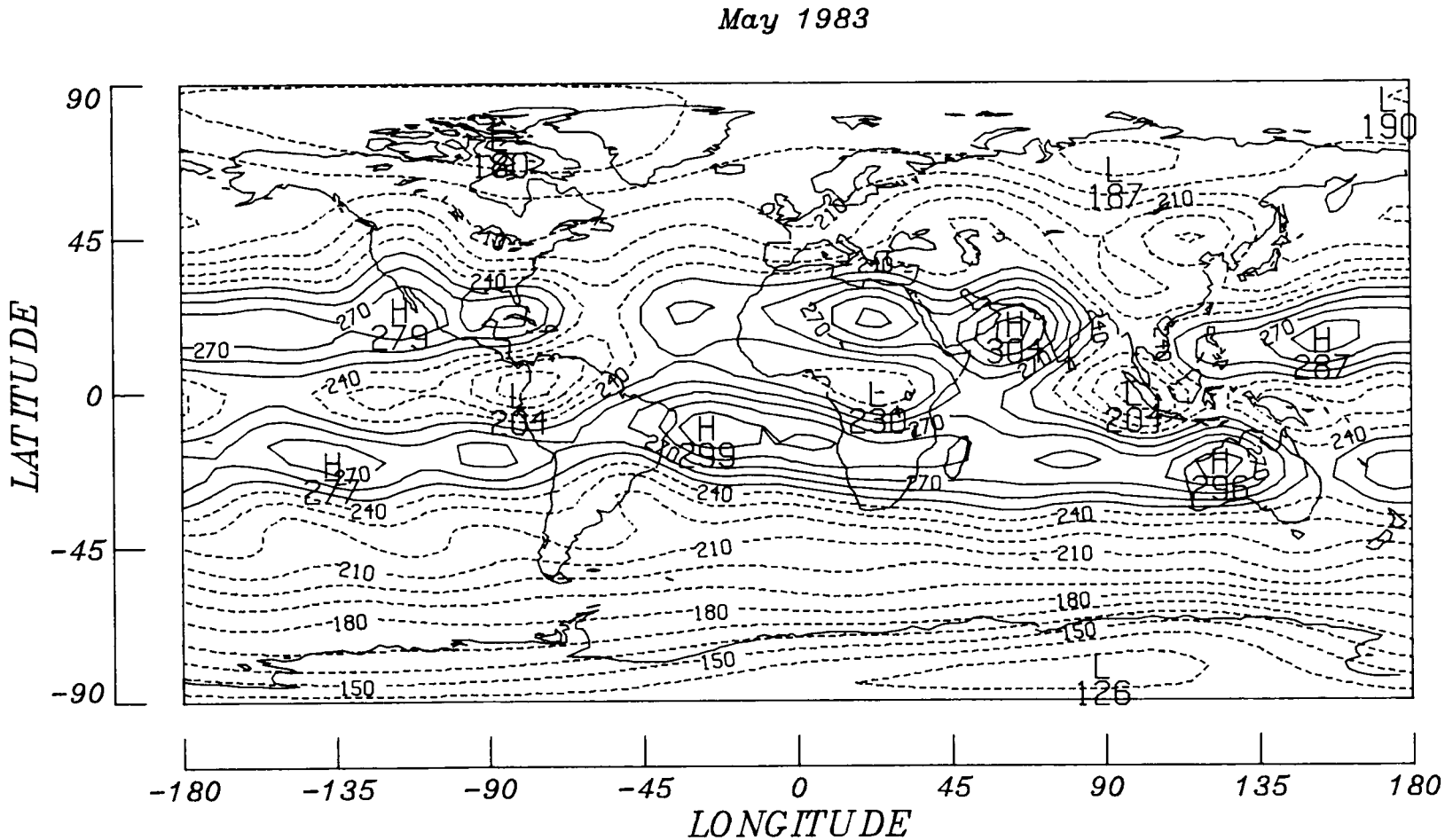
May 1983

C_n^m

		12	11	10	9	8	7	6	5	4	3	2	1	m/n
0	233.373	.181	-.519	-.588	.432	-.001	.071	.122	-.050	-.353	-.015	-.087	-.195	12
1	4.439	2.199	-.256	-.620	.061	-.513	-.642	-.593	-.294	-.117	-.422	-.373	.433	11
2	-26.680	1.111	2.371	.486	-.619	.677	.072	.258	-.210	.397	-.321	-.610	2.952	10
3	4.358	-1.509	.832	.021	.389	.727	.358	-.202	-.370	-.264	1.372	-.071	-.779	9
4	-5.293	1.873	-2.117	-.978	-1.921	-.519	.800	-.195	-.617	-.518	1.057	1.823	-2.083	8
5	.655	.781	-1.143	.469	-.739	.189	1.574	.914	.623	.668	-1.088	-.156	-.239	7
6	5.249	-2.852	1.638	1.871	.910	.071	.766	.993	.366	.205	-1.294	-1.169	2.143	6
7	1.288	-.843	.263	-.406	-.252	-.800	-.182	-.620	-2.519	-1.769	1.221	-.679	-1.155	5
8	-6.583	2.491	.769	-.462	-2.008	-.805	.570	.483	-.694	-2.457	.879	.874	2.454	4
9	-.161	.379	1.174	.127	-1.055	-.753	.159	-1.546	-1.329	.583	-.220	2.170	-.815	3
10	4.558	-1.488	.910	-.616	.548	-.496	.734	-.168	-.848	.237	-.284	3.930	-.190	2
11	.399	-.562	-.542	-.727	.461	.428	.545	1.070	-.270	.070	.399	-.063	1.668	1
12	-1.519	1.478	-.356	1.069	.228	.234	-.473	-.311	-.506	.490	.201	-.299	.272	
n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	

S_n^m

May 1983



LATITUDE
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LONGITUDE
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L 190
L 187
H 279
H 304
H 287
L 204
L 230
H 299
H 277
H 296
L 126
270
240
210
180
150

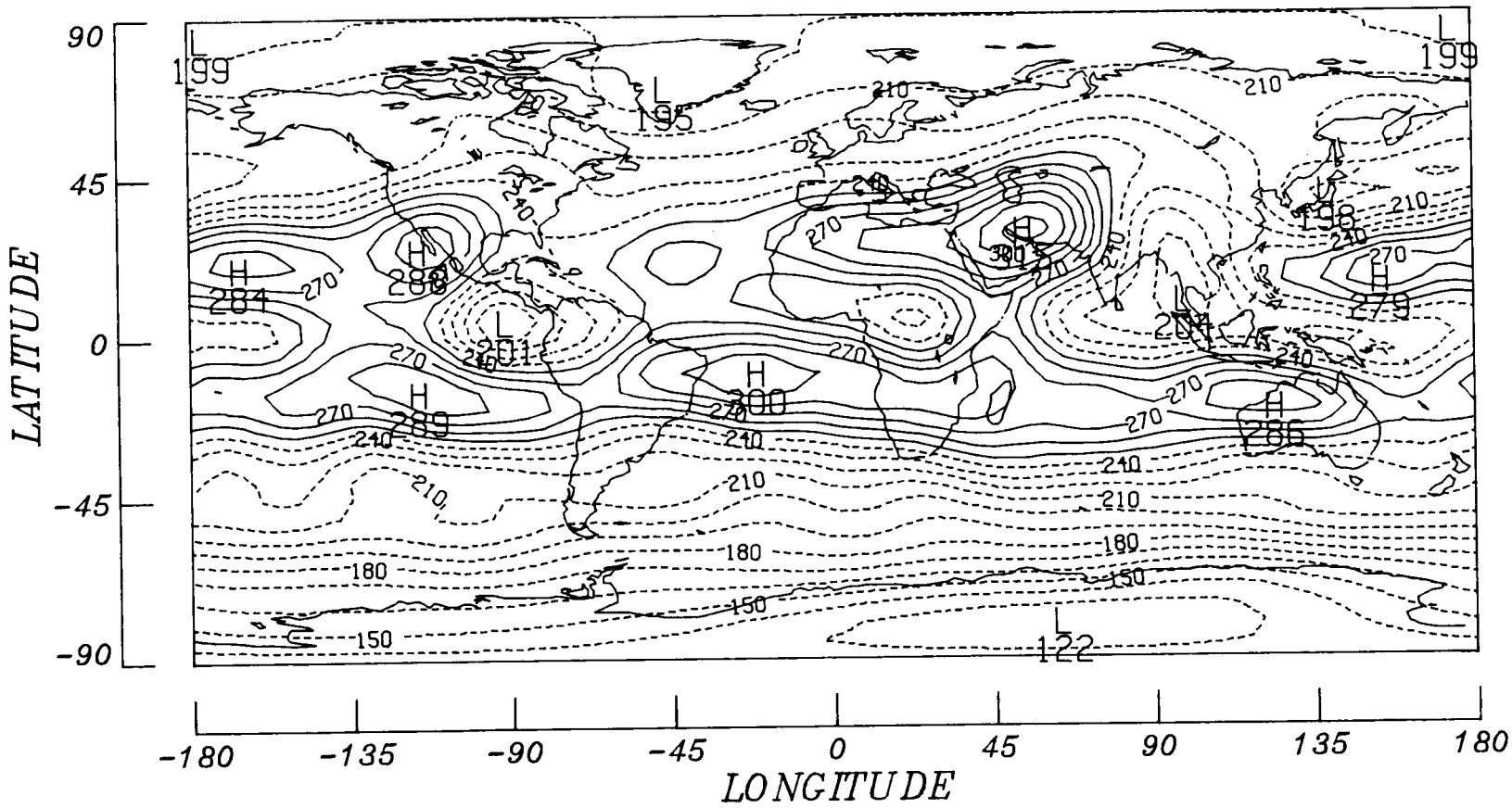
June 1983

C_n^m

		12	11	10	9	8	7	6	5	4	3	2	1	m/n
0	234.727	.411	-.588	-.275	-.590	.366	-.241	.707	.340	-.562	.315	-.922	.054	12
1	9.240	3.713	.075	.241	.118	.290	.103	-.394	-.116	.008	-.442	.080	-.309	11
2	-25.251	2.543	2.944	.441	-.115	-.147	.416	-.677	.428	.027	-.438	1.317	1.245	10
3	6.776	-1.023	1.293	.038	.541	.418	.760	.151	.523	-.136	1.643	1.119	-.512	9
4	-5.363	1.494	-3.074	-1.681	-4.021	.233	.158	.980	-.897	-.358	.819	.792	-1.187	8
5	-2.274	-1.374	-3.294	-1.553	-1.774	-1.172	-.292	.461	-1.286	.240	-1.672	-1.483	.233	7
6	4.546	-3.675	.739	1.824	1.721	-.070	1.895	-.166	-.147	-.463	-.848	-1.875	1.103	6
7	4.344	-1.120	1.101	.501	1.408	.339	1.431	.698	-1.171	-1.626	1.971	-.563	-2.802	5
8	-5.841	1.886	.924	-1.069	-.013	-.754	.192	.737	.130	-1.837	.712	1.603	2.867	4
9	-3.307	1.858	.577	.474	-.001	.199	.774	.819	-.673	.689	-.513	3.568	1.589	3
10	3.392	-.030	-.009	.222	.428	.969	.232	-.135	-.984	.490	.362	5.187	-.410	2
11	.876	-1.312	-1.140	-.188	.050	.486	-.960	.625	-.351	.082	-.036	-.802	-.691	1
12	-.678	.784	-.432	.725	.322	-.105	-.594	-.206	.276	-.237	.296	-.065	-.173	
n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	

S_n^m

June 1983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LONGITUDE
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L 199
L 122
H 284
H 288
H 289
H 300
H 301
H 279
H 286
210
240
270
180
150

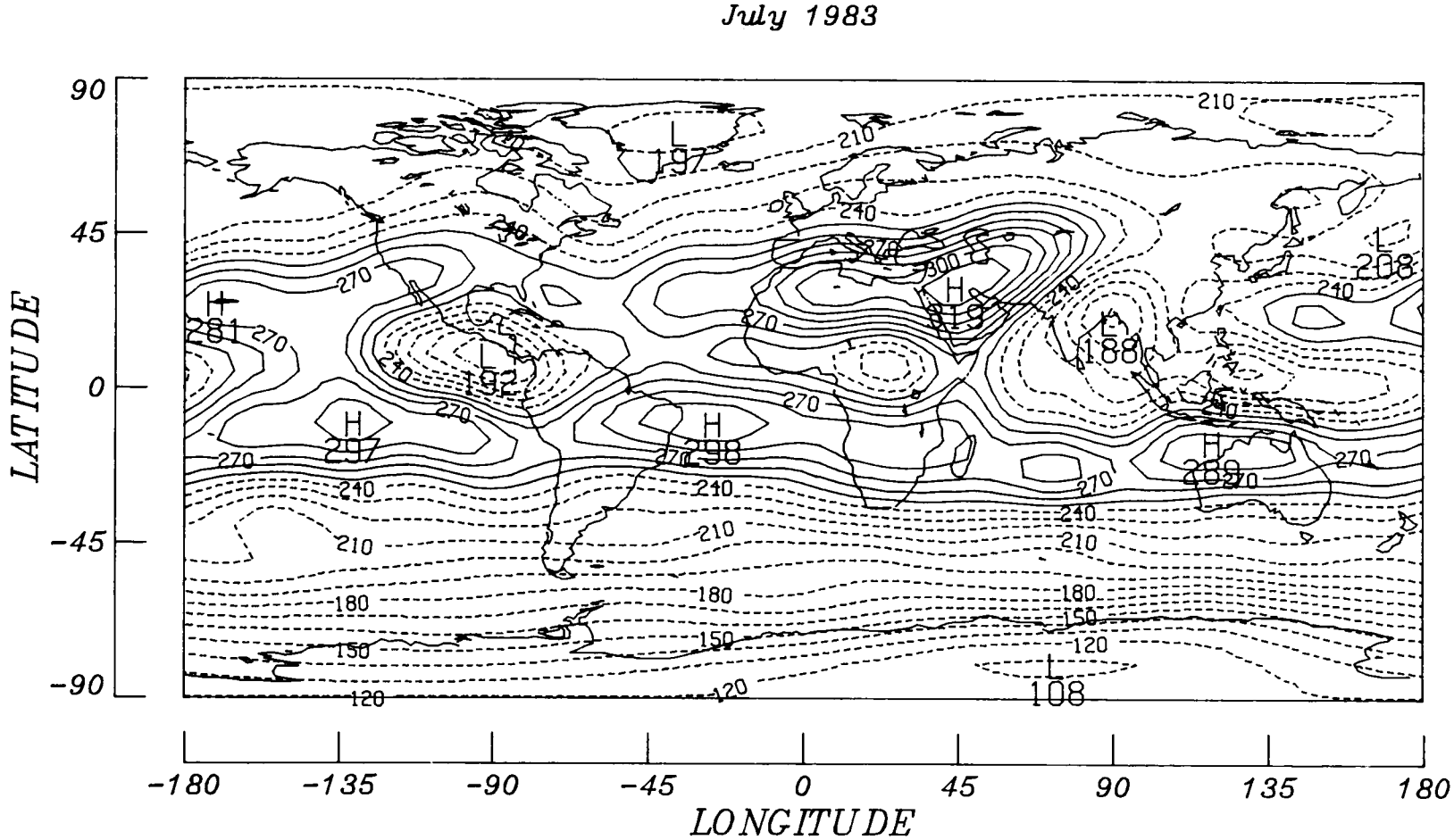
July 1983

C_n^m

		12	11	10	9	8	7	6	5	4	3	2	1	m/n
0	236.073	-.579	-.270	-.084	-.051	.419	.464	.071	-.238	-.241	-.683	-.561	-.743	12
1	12.521	4.215	.543	.247	-.085	.313	-.046	-.228	-.250	.756	-.037	1.094	.207	11
2	-25.125	4.314	5.175	1.173	.295	.908	.149	.455	.769	.470	.995	1.669	2.121	10
3	8.801	-.226	3.255	.300	-.329	1.071	.541	1.379	.177	-.315	1.476	.300	-1.344	9
4	-7.675	-.092	-2.562	-1.138	-4.558	.462	-.197	.493	-1.277	-.875	-.096	-.333	-1.360	8
5	-4.935	-1.863	-3.951	-.735	-2.199	-.540	.201	-.633	-.868	-1.004	-2.674	-1.539	.503	7
6	4.530	-2.488	-.178	1.371	1.313	.754	1.193	-.721	-.766	-1.054	.580	-.538	1.218	6
7	7.310	-.904	.383	.239	1.116	.174	1.175	.785	-1.081	-.218	3.607	.288	-3.316	5
8	-4.227	.796	1.914	-.914	.149	-.288	.518	.914	.261	.280	.342	1.290	3.614	4
9	-3.918	1.807	1.025	.076	.395	.040	.174	-.590	.101	.314	-1.278	3.828	2.752	3
10	1.733	.041	-.465	1.039	-.013	.936	-.022	.052	-.130	.348	.630	4.950	-.615	2
11	1.003	-1.572	-1.217	.020	-.814	.507	-.491	.516	-.498	.084	.580	-.079	-2.076	1
12	.100	.352	-.422	-.496	.426	-.534	-.479	-.157	.031	-.022	.412	-.293	-.731	
n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	

S_n^m

July 1983



LATITUDE
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LONGITUDE
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L 192
H 297
H 298
H 319
L 188
H 289
L 208
L 197
L 108
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120

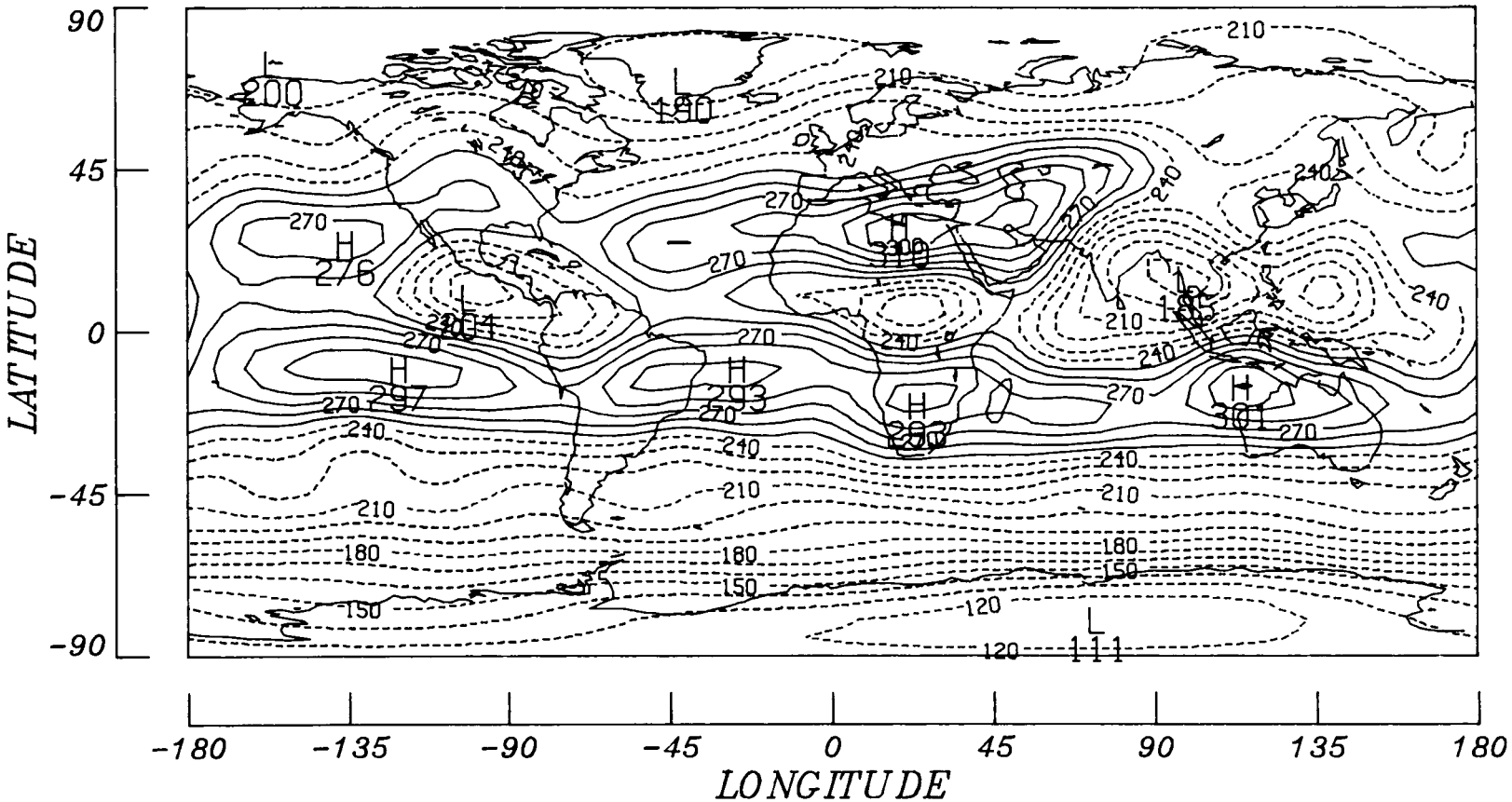
August 1983

C_n^m

		12	11	10	9	8	7	6	5	4	3	2	1	m/n
0	236.579	.080	-.535	-.425	-.623	-.202	-.278	.384	.280	.132	.014	.102	-.602	12
1	11.143	3.639	-.091	.063	.299	-.055	-.823	.203	.594	1.160	.346	-.614	-.430	11
2	-24.745	2.944	4.673	.708	.189	.209	-.054	.473	.280	.367	.453	.458	1.877	10
3	10.036	-.059	2.788	.282	-.388	.686	.707	1.043	-.594	-.504	1.440	.086	-.256	9
4	-9.457	-.524	-1.735	-1.377	-3.992	.026	.799	.832	-1.228	-1.413	.399	-.400	-.443	8
5	-6.584	-2.896	-3.935	-.706	-1.739	-1.517	.627	-.805	-.502	-.509	-1.566	-.266	.615	7
6	3.821	-1.183	-.607	2.541	.036	.226	1.297	-.476	-.719	-.472	.781	-.651	-.007	6
7	7.910	1.078	1.339	.927	.563	.502	1.029	.956	-1.406	-.471	3.088	-.611	-3.499	5
8	-3.070	.508	1.205	-1.437	.762	-.259	-.085	.205	-.068	.968	-.113	1.210	4.193	4
9	-3.751	-.690	.272	-.134	1.031	-.207	-.357	-.220	.283	.751	-1.441	3.105	3.446	3
10	1.613	-.223	.209	1.877	.014	.698	-.330	-.029	-.905	.535	-.579	3.346	-1.039	2
11	.719	-.496	-1.071	1.027	-.494	.203	.112	.512	-.141	-.581	-.794	-.463	-2.767	1
12	.793	.684	-.741	-.695	.548	-.407	.036	-.327	.167	-.248	-.716	.131	.176	
n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	

S_n^m

August 1983



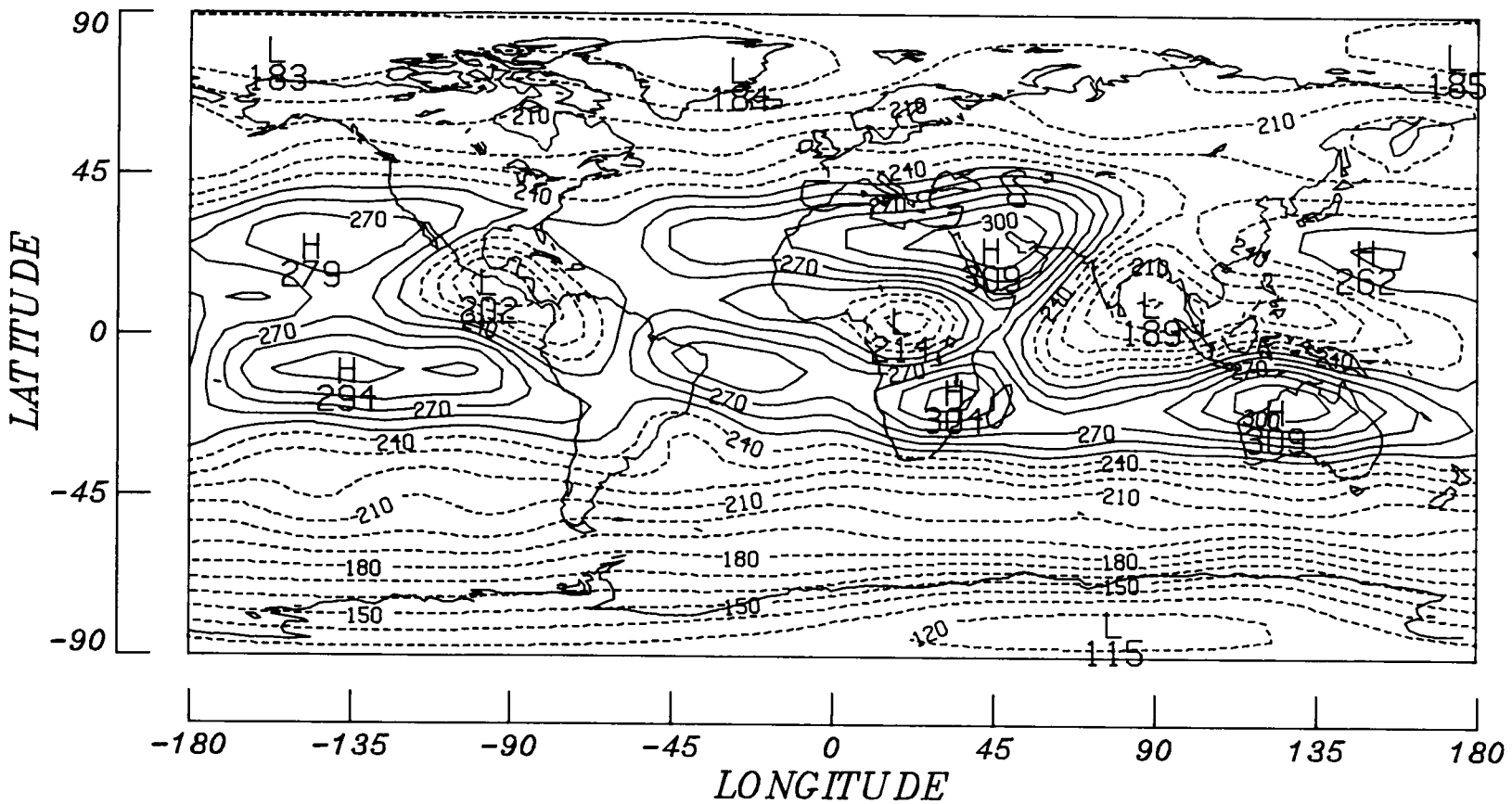
September 1983

C_n^m

		12	11	10	9	8	7	6	5	4	3	2	1	m/n
0	235.945	-.017	-.208	-.600	-.117	-.511	-.256	-.594	-.331	-.820	.581	.012	-.242	12
1	7.977	2.095	.017	-.115	.061	-.371	.252	-.871	.637	.516	-.361	.685	.663	11
2	-26.557	3.657	4.705	.828	.243	.555	-.020	.285	.837	.689	.103	.319	1.624	10
3	6.422	.119	3.342	1.058	.034	1.043	.213	.790	-.140	.007	1.954	.449	-2.329	9
4	-8.765	-1.319	-1.669	-2.050	-5.429	-.200	.650	-.095	-.777	-.756	.490	.006	.181	8
5	-4.270	-1.615	-2.775	-.823	-2.159	-1.540	-.278	-.694	.010	.301	-1.622	-1.373	2.639	7
6	5.086	-.422	.109	2.580	.164	.471	.784	-1.160	.265	.093	.745	-.274	.389	6
7	6.845	.320	1.146	.080	.654	1.145	1.384	.983	-1.773	-1.034	1.763	-.881	-4.090	5
8	-4.617	.749	.891	-2.058	.250	-.242	.254	1.067	.341	.019	-.227	.290	3.265	4
9	-3.401	.502	-.197	.290	.120	-.465	-.972	-.758	-.023	.567	.149	3.513	2.151	3
10	1.064	.042	-.318	1.254	-.144	.427	-.018	.083	-.720	.100	.110	4.242	-.889	2
11	1.028	-.204	-1.326	-.756	-.468	.257	.832	.802	-.083	-.418	.404	-.069	-1.661	1
12	.595	.568	-.323	-.533	.612	-.418	-.515	.088	.665	.617	-.007	-.234	-.139	
n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	

S_n^m

September 1983



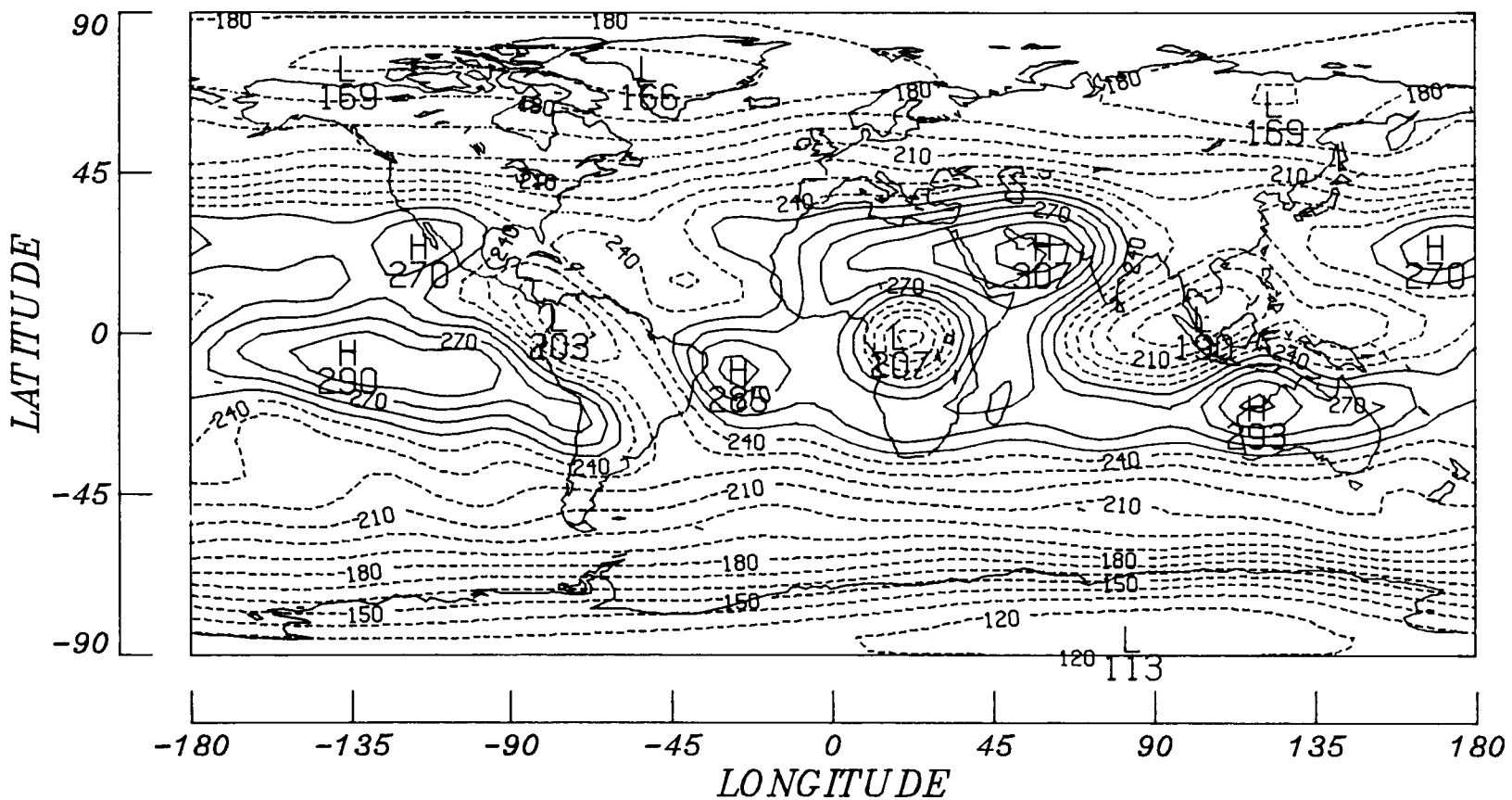
October 1983

C_n^m

		12	11	10	9	8	7	6	5	4	3	2	1	m/n
0	228.837	.184	.421	-.092	.127	-.250	-.497	-.469	-.511	-.458	.443	.052	-.165	12
1	1.006	1.947	.351	-.896	.548	.123	.329	.042	.883	-.368	-.743	-.783	.825	11
2	-28.481	3.050	2.837	1.072	.079	.244	.752	.292	1.143	-.056	.029	.528	1.844	10
3	3.457	-.686	2.804	.784	.787	-.088	-.207	-.750	-1.130	.987	1.688	.883	-1.932	9
4	-8.129	-.517	-1.338	-2.185	-2.534	-.159	-.283	.377	-1.846	-.271	.596	.028	.064	8
5	1.193	-1.421	-1.781	-.835	-.738	-.470	.338	.731	1.096	-.219	-2.304	.482	2.419	7
6	4.787	.862	1.575	2.706	1.059	.563	2.308	-.702	.730	1.329	-.518	.618	1.486	6
7	5.204	.823	.544	.539	.224	.564	1.046	.800	-3.227	-1.451	1.641	-1.875	-3.868	5
8	-3.939	-1.473	-.524	-.943	-.615	-1.003	.096	.950	.480	-3.530	-.272	-1.656	.824	4
9	-1.725	-.382	-.076	-.279	.333	-.656	-.506	-1.334	.189	.563	1.467	4.150	1.582	3
10	1.318	1.098	.660	.022	.925	.823	.038	-.213	-1.439	-.372	-.037	6.695	.515	2
11	.663	.235	-.858	-.561	.016	.655	.518	.974	-.052	-.510	-.365	.714	-.806	1
12	.596	.162	-.049	.093	.161	-.650	-.332	-.276	.948	.380	.632	.483	.391	
n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	

S_n^m

October 1983



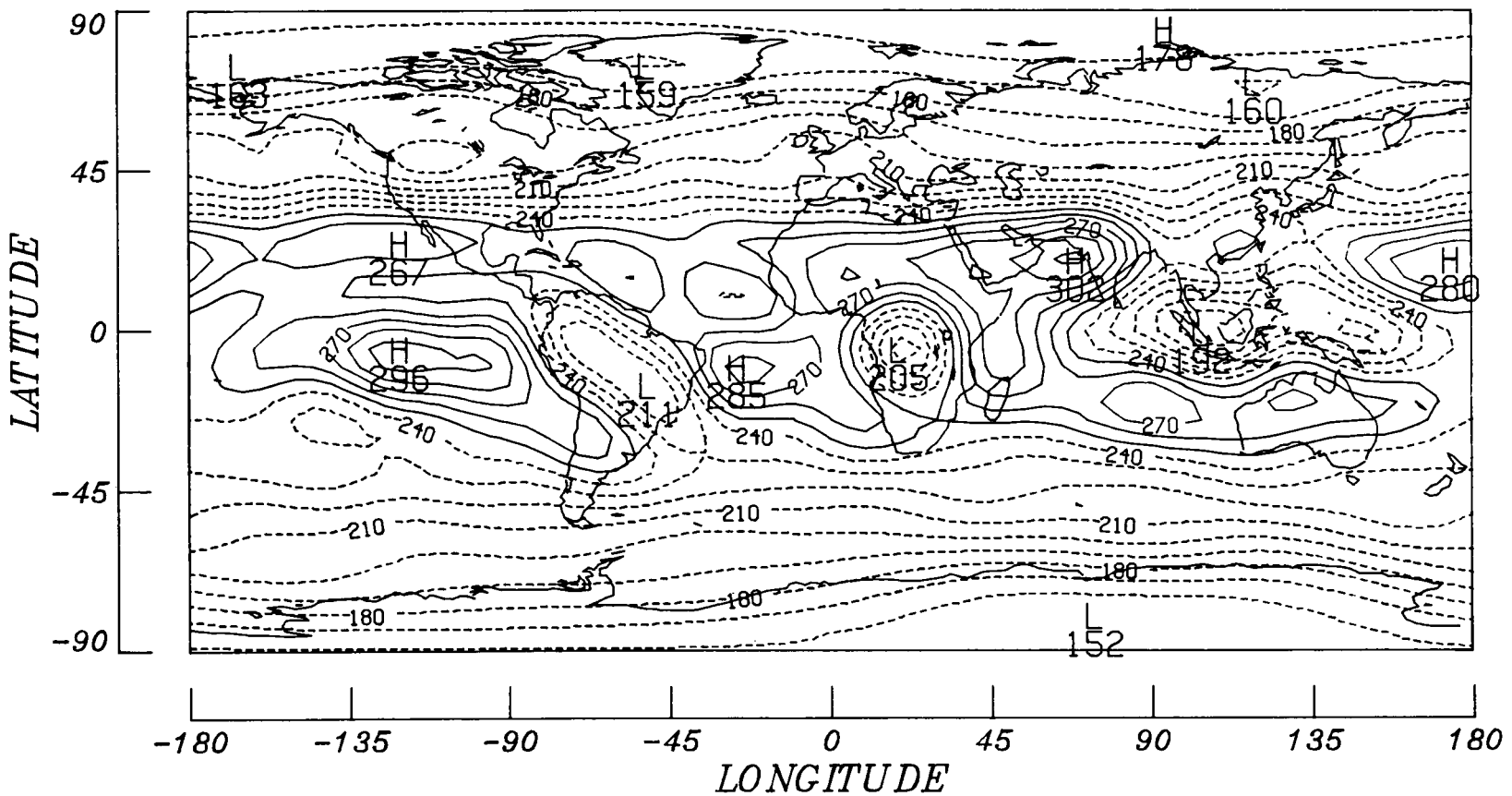
November 1983

C_n^m

		12	11	10	9	8	7	6	5	4	3	2	1	m/n
0	231.218	.206	.086	.596	.275	-.380	.249	-.393	-.556	-.101	.774	-.584	-.225	12
1	-3.185	2.120	.894	-.203	.052	.485	.284	.116	.538	-1.302	-.561	-.843	1.739	11
2	-26.522	1.865	.640	.561	-1.078	.073	-.223	.156	1.381	-.393	-.523	.610	2.070	10
3	-1.300	-1.636	2.368	-.585	.523	-.962	.213	-.087	-.601	1.777	.893	1.385	-2.319	9
4	-4.779	-.154	-.113	-2.232	.131	-.654	1.279	-.089	-1.973	-.867	.833	.002	.303	8
5	2.830	-.075	-1.012	.093	-1.221	.025	-.027	.424	1.124	-1.466	-1.043	.273	1.950	7
6	4.494	1.129	1.975	2.970	.684	.085	1.363	-.616	1.367	2.557	-.677	2.216	.446	6
7	.887	-.200	.933	.029	.409	.954	1.354	.675	-2.614	-.115	.478	-1.159	-3.730	5
8	-4.481	-1.087	-.563	-1.390	-1.151	-.349	.174	.337	1.550	-3.891	-.594	-3.471	.465	4
9	-1.519	-.029	-1.054	-.330	.589	-.538	-.598	-.897	-.499	1.024	.562	2.019	.484	3
10	1.949	.539	-.219	.890	1.642	.541	.212	-.698	-1.451	-.184	-.149	4.987	-.133	2
11	2.255	.013	-.302	.389	-.371	.365	.232	.478	.732	-.317	.662	.396	-1.512	1
12	.535	-.183	.172	-.052	-.123	-.294	-.389	.322	.997	.266	.428	-.505	.365	
n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	

S_n^m

November 1983

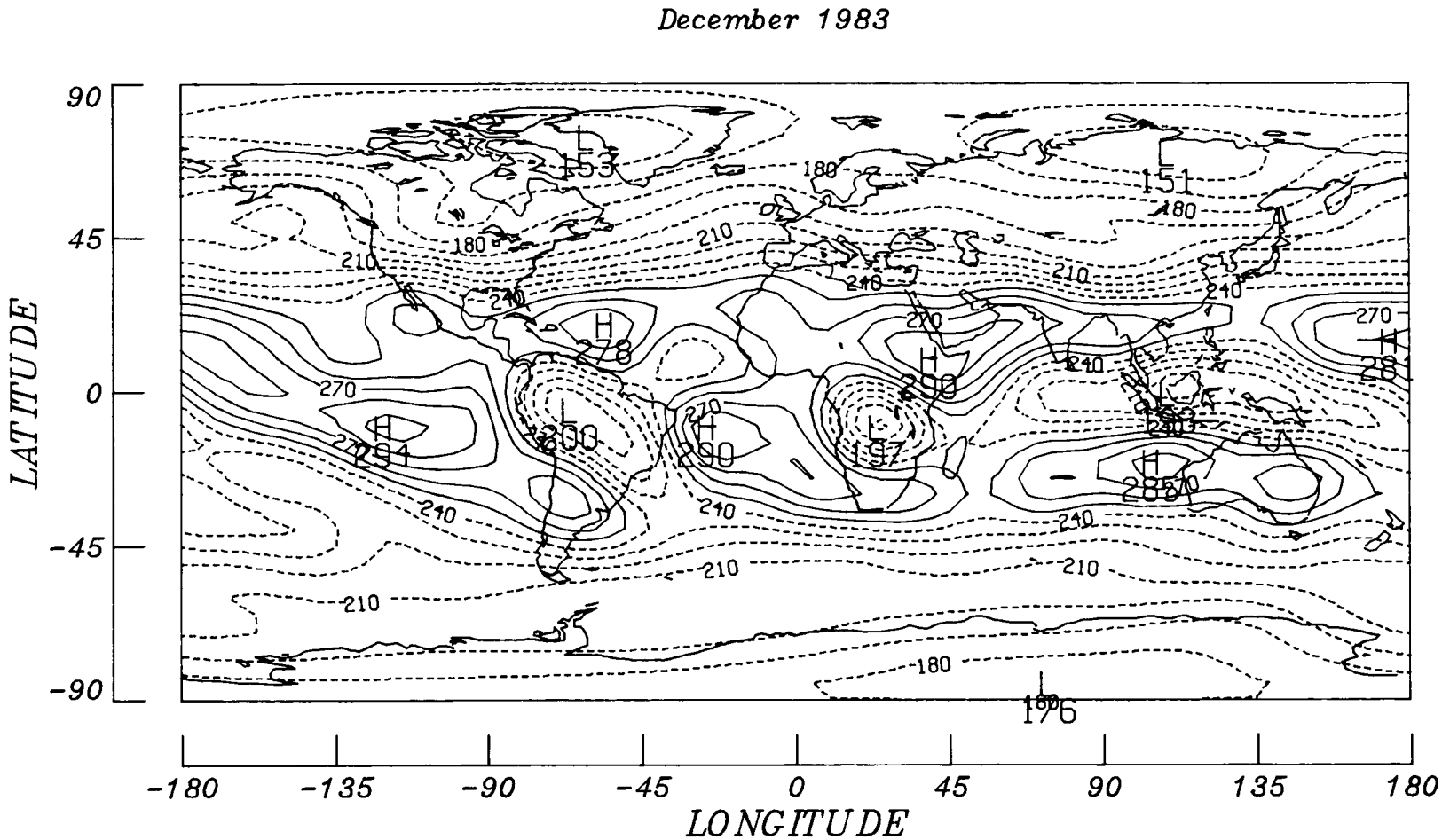


December 1983

C_n^m

		12	11	10	9	8	7	6	5	4	3	2	1	m/n
0	230.786	.681	-.751	.006	.254	-.221	-.376	-.783	-.491	-.218	1.441	-.549	-.383	12
1	-7.755	1.043	.486	-.965	-.159	.315	.205	-.142	.420	-.769	.646	-.037	.928	11
2	-25.079	.563	2.344	.598	-.441	-.113	.436	.059	1.071	-.497	-1.476	1.161	2.235	10
3	-2.491	-.512	3.418	1.136	.001	-.756	-.621	-.744	-.922	2.030	.332	.171	-2.086	9
4	-3.535	.238	1.190	-3.013	1.664	.096	.042	.019	-1.550	.066	1.471	-1.404	-1.212	8
5	3.818	-1.456	-.060	-1.031	-1.396	-.606	-.911	.640	1.292	-2.200	-2.117	.735	2.400	7
6	6.133	-.169	2.507	4.293	-.323	-.893	.254	-.889	1.156	1.512	-1.902	4.102	1.153	6
7	-2.151	.880	.883	-.301	.485	1.335	.748	1.620	-2.199	.407	1.026	-.082	-3.606	5
8	-4.265	-.126	-1.676	-3.355	-1.175	-.086	.848	.619	.638	-2.506	-.759	-3.172	.424	4
9	1.152	.436	-.910	.522	.480	-.248	.153	-.795	.094	.572	.179	1.458	1.646	3
10	1.397	.615	1.878	1.213	1.322	.438	-.353	-.511	-1.367	-.127	-.192	3.415	.413	2
11	1.375	-.679	.352	-.516	-.595	-.116	-.232	.350	.087	-.559	-.609	.180	-2.124	1
12	.195	-.172	-.329	.393	.039	-.097	-.023	.080	.829	.473	.821	-.205	.529	
n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	

S_n^m


December 1983
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LONGITUDE
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270

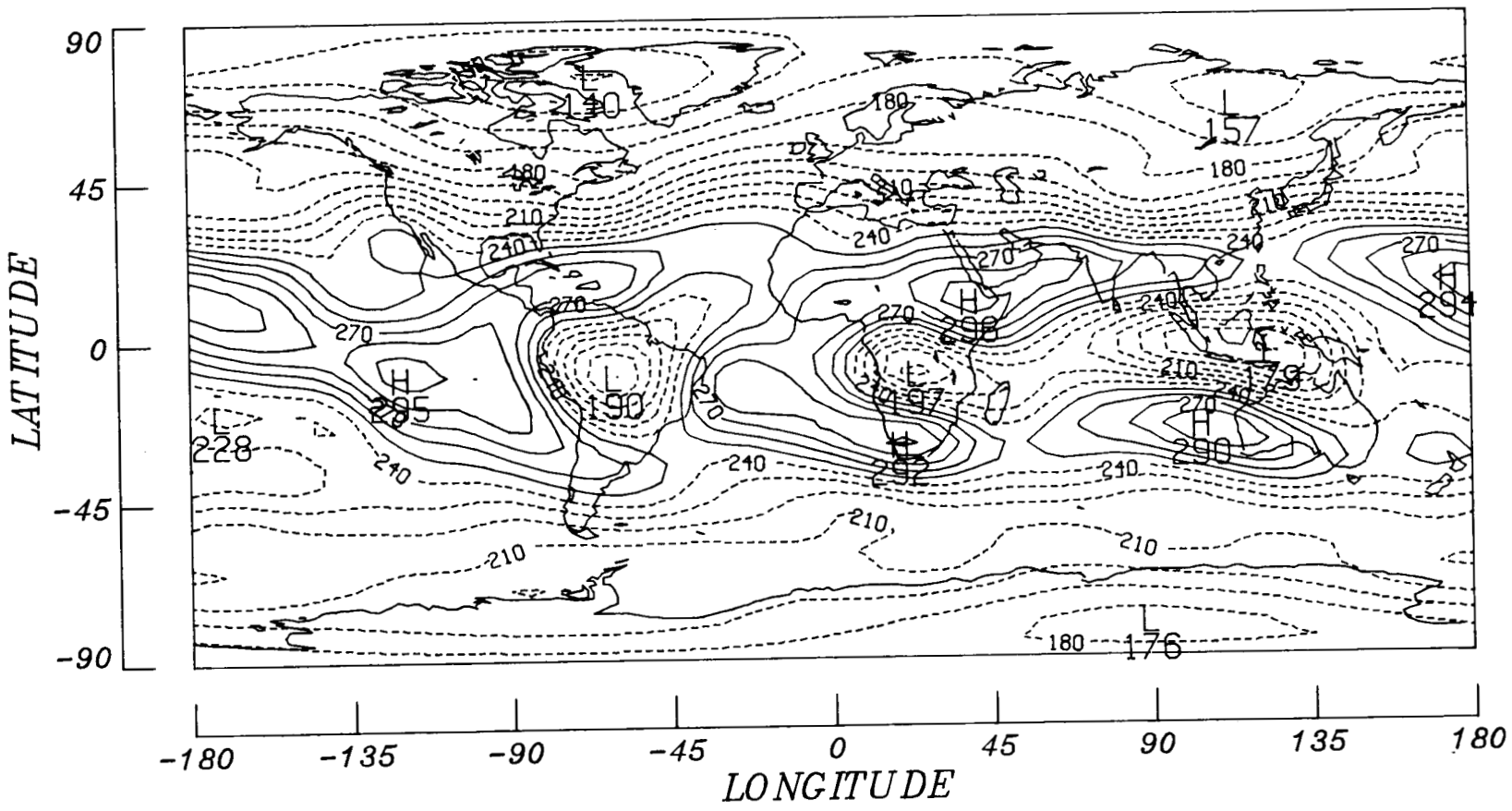
January 1984

C_n^m

		12	11	10	9	8	7	6	5	4	3	2	1	m/n
0	230.823	-.081	.083	-.970	-.485	-.296	.154	-.298	.017	.260	.258	-.476	.095	12
1	-10.172	1.130	.641	-.033	-.145	.924	-.209	.137	.686	-1.779	.950	.626	-.017	11
2	-25.456	.241	3.367	.197	.101	.239	.405	-.077	.132	.064	-1.127	1.157	2.198	10
3	-3.774	-.163	3.026	.479	-.503	-.405	.504	-.576	-.961	3.343	-.266	-.156	-2.143	9
4	-3.339	1.183	-.278	-3.425	3.214	.596	-1.089	.163	-.644	-1.294	1.739	-1.329	-1.828	8
5	5.568	-1.868	.164	.345	-1.980	-1.115	.157	-.071	1.486	-3.824	-.607	.278	3.261	7
6	5.905	-.512	3.266	3.904	-1.347	.713	-.764	-1.051	.341	1.782	-2.130	3.698	3.412	6
7	-4.243	1.512	.166	-.856	.775	-.164	.962	.538	-2.140	.184	.498	.730	-2.939	5
8	-3.583	-.143	-1.755	-2.346	-.994	-.508	.672	.177	.264	-3.784	.455	-2.835	-.152	4
9	2.895	-.346	-.338	-.137	.953	.099	-.765	-1.116	.103	.890	.693	1.330	3.327	3
10	.385	1.246	1.532	-.090	2.010	.201	.136	-.191	-.963	-.647	.378	4.599	1.079	2
11	.510	.002	-.057	.530	-.958	-.010	.277	.015	.351	.033	.032	.206	-4.361	1
12	.410	-1.411	-.444	1.214	-.728	.387	-.338	-.117	.409	.438	-.153	.141	.560	
n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	

S_n^m

January 1984



February 1984

C_n^m

		12	11	10	9	8	7	6	5	4	3	2	1	m/n
0	230.426	.772	.565	-1.149	-.216	-.188	-.145	-.038	.118	-.005	1.187	-.734	.710	12
1	-8.283	2.139	.371	.411	.105	.048	-.493	.496	-.217	-1.078	1.385	-1.030	.053	11
2	-26.878	.003	4.358	-.318	-.524	.211	.354	-.774	.202	-.111	-1.832	1.236	1.666	10
3	-2.527	-.418	3.380	-.641	-.447	-.988	.302	-1.191	-.720	1.812	-.203	1.928	-1.750	9
4	-4.960	1.638	-1.196	-2.888	1.432	-.513	-1.064	.951	-.971	-.590	2.432	-1.244	-.997	8
5	7.068	-1.344	-1.078	1.356	-1.367	-1.991	.186	.217	.792	-2.659	-1.249	-.786	2.380	7
6	5.738	-1.105	3.392	3.692	-.500	.236	.023	-.497	.174	1.143	-1.970	3.884	3.945	6
7	-4.626	1.118	.828	-1.579	.851	.298	.633	1.099	-3.373	.985	1.557	.808	-2.952	5
8	-5.133	-.180	-2.097	-1.533	-.096	-.050	.244	1.656	.306	-3.654	.627	-2.940	-.676	4
9	3.383	-.431	-.474	.955	-.114	-.382	.071	-1.001	-.540	.406	.051	1.204	.762	3
10	2.122	1.124	1.400	-.390	1.063	-.037	.108	-.177	-.460	-.701	.382	4.572	-.435	2
11	.557	-.197	-.419	.169	.205	.133	-.112	.631	.478	-.136	.219	.741	-3.577	1
12	.204	-1.040	-.382	1.211	-.408	.408	.208	-.225	.262	.520	.127	.025	.277	
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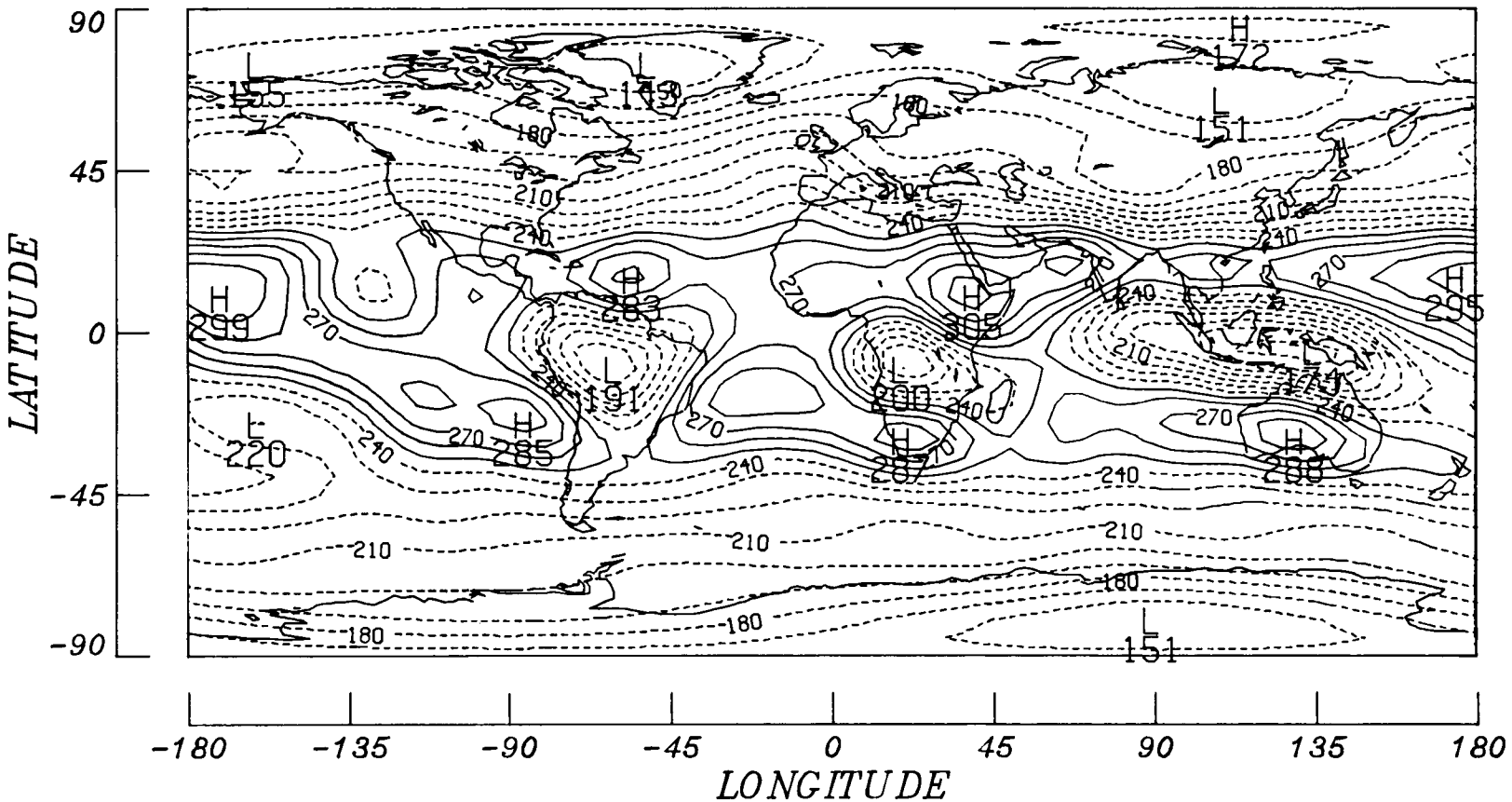
S_n^m

February 1984



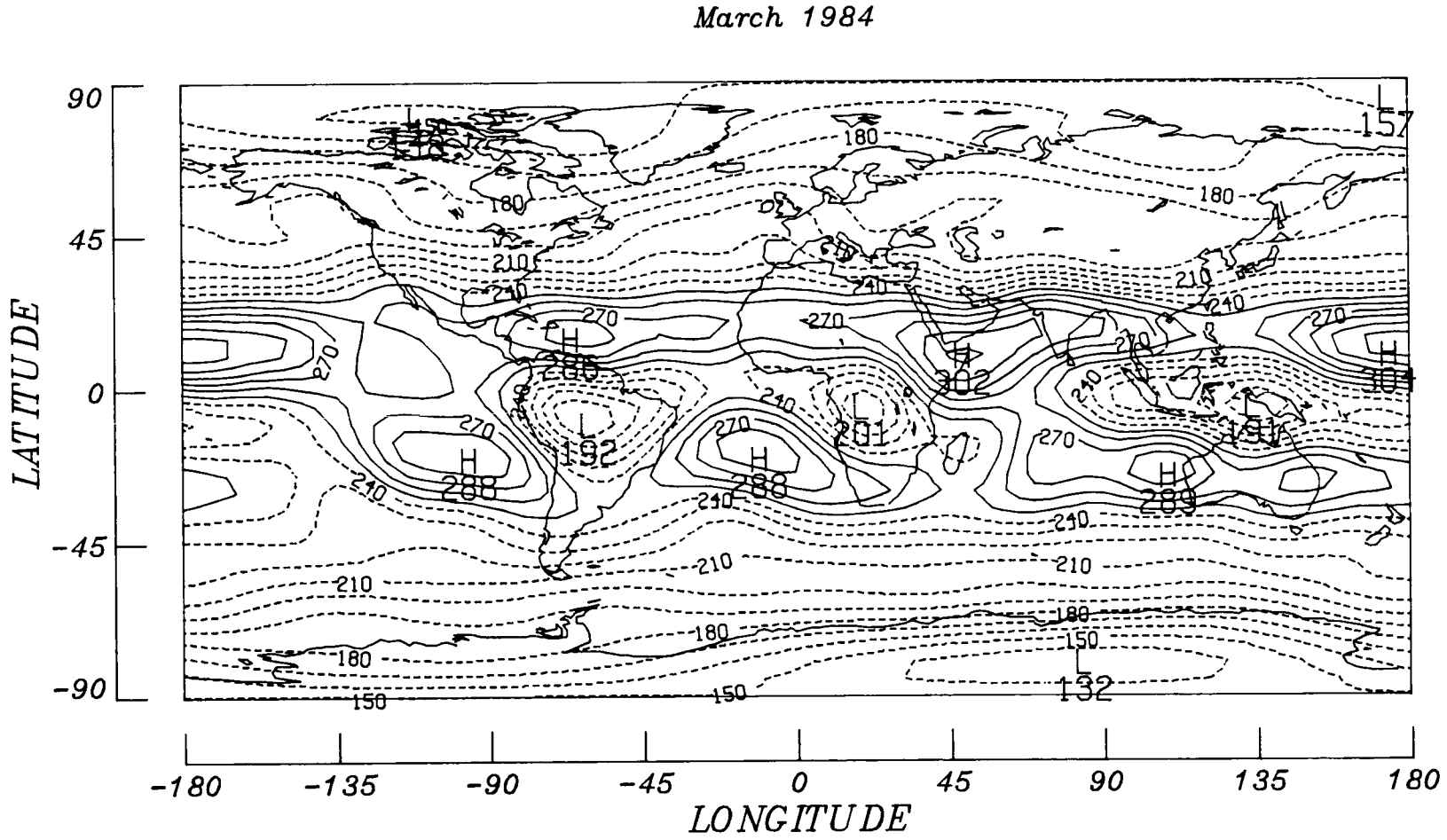
March 1984

C_n^m

		12	11	10	9	8	7	6	5	4	3	2	1	m/n
0	230.468	.528	-.112	-.669	-.504	-.029	.394	-.440	.077	-.313	.817	-.786	1.043	12
1	-4.281	.421	.507	.113	-.133	-.195	.092	-.195	.165	-.661	1.066	-.828	-.133	11
2	-27.905	.944	.108	.578	.768	.452	-.176	-.512	.241	-.240	-.757	1.126	1.804	10
3	-.298	.290	2.369	-1.132	-.596	-.215	-.227	-.365	-.544	1.833	-.441	1.115	-1.308	9
4	-5.026	1.664	1.450	-2.422	2.507	-.354	-.521	1.144	-.823	-.639	.708	-1.226	-.764	8
5	6.767	-.993	-.961	1.002	-1.943	-.619	.338	.018	1.446	-2.737	-.730	-.011	.538	7
6	4.428	-1.234	1.370	4.343	.436	.158	-.152	-1.147	1.180	1.508	-1.186	3.368	2.615	6
7	-5.385	.656	1.145	-1.399	1.008	.812	.433	.728	-2.089	.917	.775	.056	-.912	5
8	-6.915	1.268	-.236	-2.845	-1.249	-.552	-.152	-.287	.053	-3.923	-.841	-2.950	1.731	4
9	3.581	-.256	-.998	.783	-.390	-.217	-.090	-.404	.111	.884	-.656	1.014	-.293	3
10	3.526	-.711	.771	1.295	1.397	.069	.577	-.496	-.706	-.661	.293	3.999	-.598	2
11	-.814	.170	.606	-.500	-.334	-.089	.222	.203	.108	.254	-.263	-.112	-.761	1
12	-.412	1.110	-.103	.136	-.094	.699	-.307	.555	.629	.660	.858	.404	.202	
n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	

S_n^m

March 1984



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April 1984

C_n^m

		12	11	10	9	8	7	6	5	4	3	2	1	m/n
0	231.333	.284	-.127	-.757	-.235	.296	.279	-.045	-.502	-.760	.267	-1.398	.705	12
1	-.115	2.003	.154	.346	.286	.319	.085	-.503	-.190	-.505	-.071	-1.209	-.170	11
2	-28.087	2.095	1.310	.125	.191	-.152	.071	-.507	.521	.630	-.307	1.328	2.308	10
3	1.695	1.293	1.074	-1.276	-.447	-.479	.103	-.504	-.529	.815	.847	2.051	-1.065	9
4	-6.998	1.076	.528	-2.540	-.689	-.261	-.024	.860	-1.084	-1.039	1.360	-.399	-.709	8
5	4.080	-2.947	-.909	.810	-.311	-.791	.804	1.346	.773	-.889	.101	-1.055	-.283	7
6	5.318	-.714	.652	3.993	.231	.071	.710	-1.132	.115	1.225	.238	1.708	2.132	6
7	-2.456	2.694	1.013	-.552	.543	.860	.421	.648	-3.654	-.712	-.221	-.329	-1.835	5
8	-7.949	.419	.146	-3.148	-.320	-.228	.177	.832	.092	-2.517	-.971	-1.237	1.217	4
9	1.636	-1.390	-.023	1.134	-.582	-.655	.509	-1.027	-.357	-.517	1.765	2.027	-.556	3
10	4.152	.126	.850	1.525	.107	.142	.482	.048	-.852	-.094	-.068	4.311	-.344	2
11	.484	.153	-.269	-.985	.744	.274	-.245	.526	.230	.170	-.531	-.011	-1.470	1
12	-.548	1.130	-.013	.528	.337	.044	-.410	.401	.087	-.104	.679	.128	.801	
n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	

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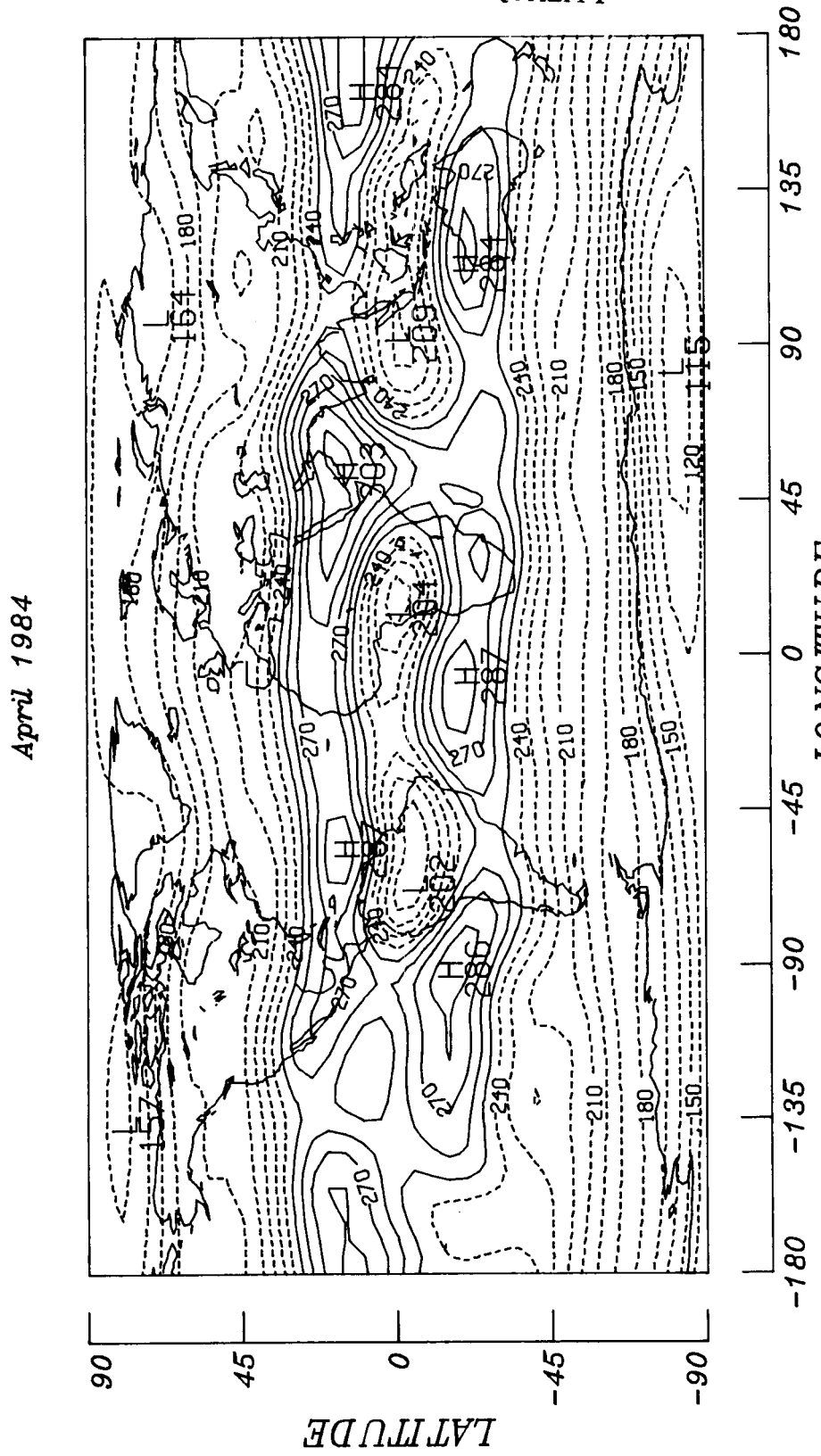

May 1984

C_n^m

		12	11	10	9	8	7	6	5	4	3	2	1	m/n
0	233.226	-.067	-.430	.259	-.104	.004	-.140	.780	-.624	-.145	.384	-1.324	.680	12
1	4.921	2.788	.367	-.579	-.450	-.687	.276	-.617	-.219	-.452	.170	-1.485	.921	11
2	-25.659	1.570	1.522	.739	.393	.201	.097	-.995	-.109	.238	.438	1.073	1.833	10
3	4.250	.476	.899	-1.427	-.561	-.798	.003	.080	-.985	.260	.541	1.530	-1.764	9
4	-5.228	1.935	-1.644	-2.621	-1.728	-.295	.194	.869	-1.868	-.415	.422	.083	-1.806	8
5	.041	-3.060	-2.417	.010	-.680	-.592	-.485	.958	.324	.034	.477	-.196	-.033	7
6	4.563	-2.482	.594	3.249	-.536	-.024	.014	1.173	1.067	-.648	.024	.984	1.460	6
7	1.520	3.055	1.782	.365	-1.350	1.093	.962	.298	-1.748	-1.059	-.195	-.408	-2.111	5
8	-6.719	1.441	1.195	-2.125	-.095	-.692	.215	-.688	-.272	-2.553	-.469	-.574	2.261	4
9	-1.485	-2.054	-.096	-.412	-.239	-1.722	.940	-.906	-.818	.821	1.011	2.159	1.636	3
10	4.062	-.514	-.137	1.253	-.452	-.157	.234	.084	-1.144	.272	-.232	4.968	-.137	2
11	1.345	.511	-.494	.332	.188	.212	-.916	.594	.158	.345	.578	-.074	-.695	1
12	-.427	.755	.166	.573	.998	.018	-.252	-.008	.209	-.088	.192	.160	-.123	
n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	

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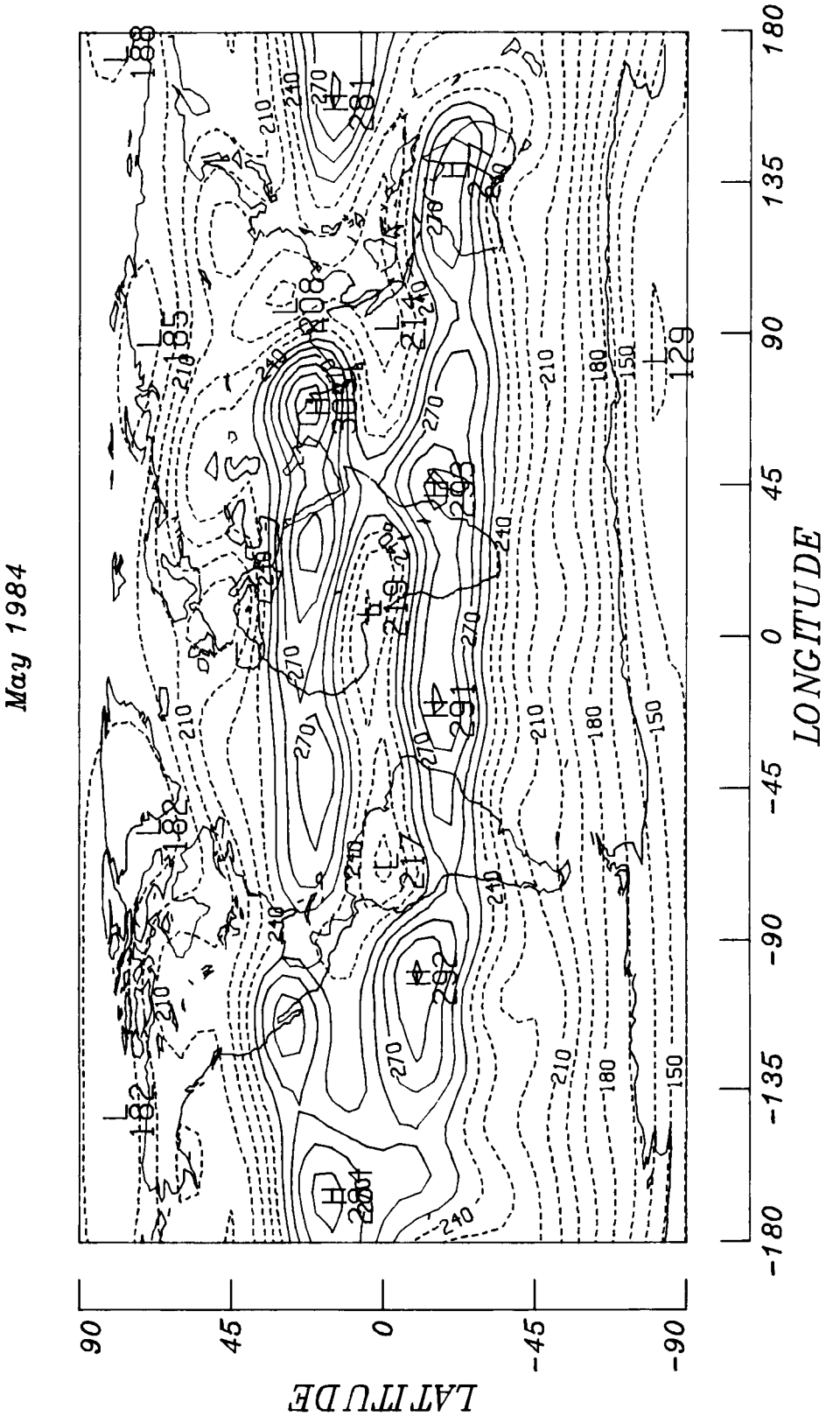

June 1984

C_n^m

		12	11	10	9	8	7	6	5	4	3	2	1	m/n
0	236.405	.216	.543	-.989	-.345	-.271	-.424	.111	-.741	-.228	-.430	-.488	.009	12
1	9.123	4.821	.797	-.521	-.205	.087	.211	-.251	-.058	.545	-.040	.443	-.247	11
2	-25.121	3.596	3.932	.476	-.043	.529	.176	-.800	.332	.991	.124	1.932	1.414	10
3	8.060	-.369	2.537	.328	-.991	.175	.468	1.086	.074	.226	.502	.590	-.491	9
4	-6.352	.652	-2.647	-3.262	-4.066	.197	.582	.459	-1.169	-1.229	-.089	-.109	-.652	8
5	-3.731	-3.298	-4.383	-1.768	-1.700	-1.187	.572	-1.443	-1.355	-1.553	-.901	-.556	.453	7
6	4.645	-2.806	-.410	2.691	.395	-.048	1.113	.467	.251	-.368	-.797	-.817	-.032	6
7	6.442	1.577	2.799	.432	.372	.648	1.564	.910	-1.315	-1.173	1.378	-1.541	-4.587	5
8	-4.043	1.618	1.470	-1.516	.456	.332	.421	-.685	-.176	-1.564	.296	.882	4.305	4
9	-3.693	-.743	-.219	.397	.087	-.489	.168	-.024	-.079	.478	.145	4.371	3.456	3
10	1.659	-.218	-.308	1.367	-.012	-.169	-.043	.711	-.921	-.086	-.341	6.039	-.984	2
11	.471	.446	-1.111	.092	-.239	.553	-.335	.586	-.603	.367	.433	-.139	-1.614	1
12	.453	.773	-.053	-.408	.895	-.274	.638	.176	-.218	-.224	.158	.235	-.134	
n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	

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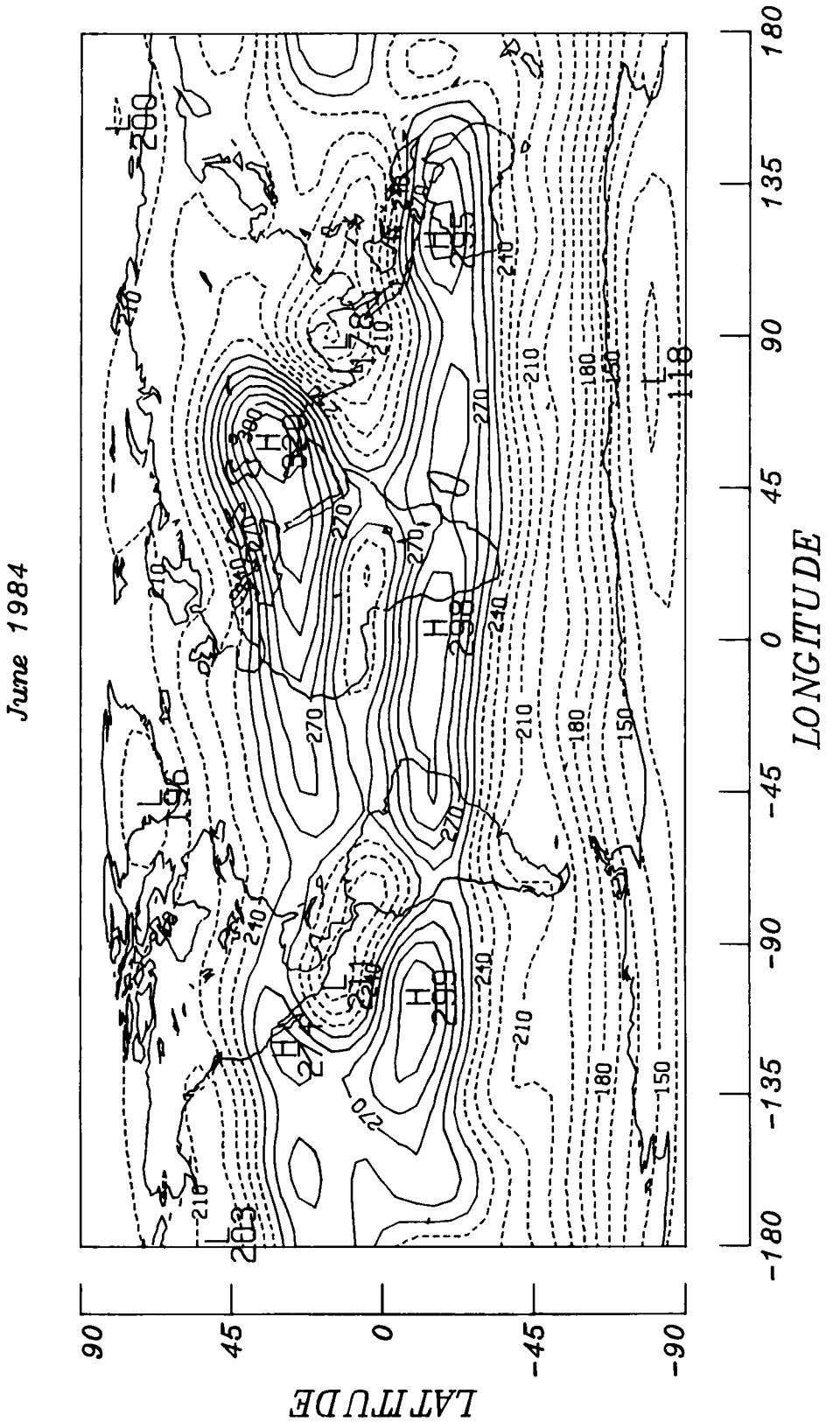


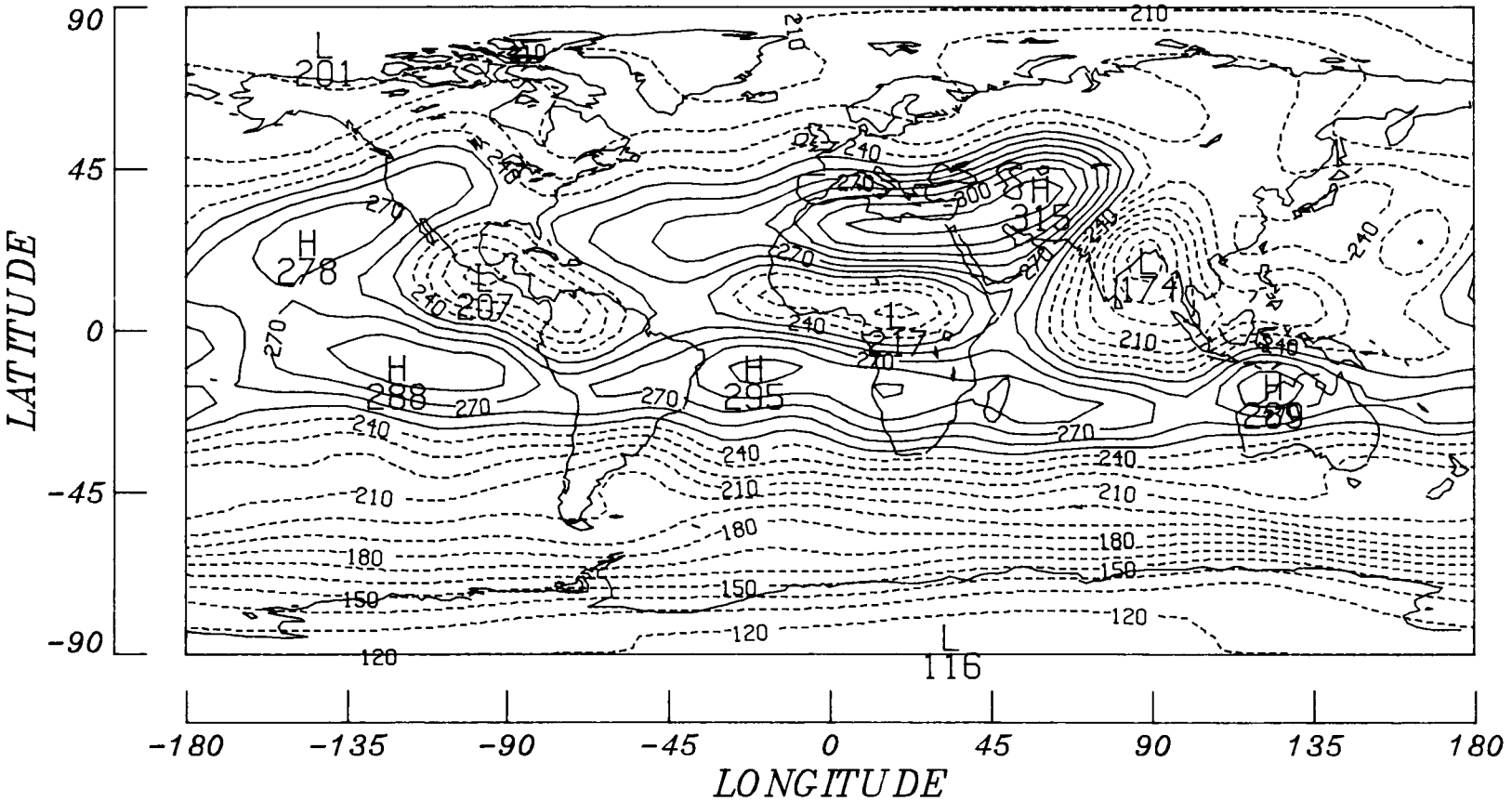
July 1984

C_n^m

		12	11	10	9	8	7	6	5	4	3	2	1	m/n
0	235.446	-.282	.242	-.025	-.666	-.223	.206	.444	-1.108	.010	.452	-.445	-.618	12
1	13.200	4.445	.289	-.208	.190	-.465	.039	.073	.089	1.440	-.041	.017	1.015	11
2	-23.630	3.386	4.951	.439	-.841	.765	.316	.099	.185	1.401	.465	1.283	1.456	10
3	8.907	.453	2.904	.481	-.028	1.113	.626	.723	-.305	-.422	.503	-.383	-.125	9
4	-8.154	.769	-2.215	-1.012	-4.957	.413	.364	.548	-.533	-2.147	-1.002	-1.064	-.396	8
5	-4.702	-3.958	-3.938	-.040	-3.859	-1.223	.983	-.444	-.306	-1.913	-.725	-.875	.901	7
6	3.866	-2.654	-1.288	1.680	.141	.748	1.939	-.140	-.502	-.299	.492	-.888	.722	6
7	7.229	2.319	.321	.065	1.022	.620	1.491	.774	-2.415	.708	1.654	-.279	-3.340	5
8	-2.679	1.549	1.023	-1.092	.353	.471	1.071	1.009	.041	-.479	.298	1.133	3.626	4
9	-2.768	.202	.338	-.528	.790	-.384	.629	-.279	-.021	.141	.536	3.361	3.403	3
10	1.010	-.813	.168	2.080	.154	-.502	-.033	.146	-.822	.007	-.118	5.397	-.624	2
11	-.475	-.692	-.935	.365	-.630	.097	.241	.829	-.276	-.271	.787	-.484	-2.133	1
12	-.250	1.451	-.651	-1.480	.251	-.167	.737	.474	.187	-.045	.638	-.086	.572	
n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	

S_n^m

July 1984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August 1984

C_n^m

n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	m/n
0	236.062	-.010	.037	-.669	-.180	-.455	-.173	.626	-.166	-.166	-.028	.444	-1.230	12
1	11.973	3.864	-.024	-.057	.468	-.043	-.182	.870	.814	1.228	.064	.056	-.604	11
2	-24.680	3.578	4.122	.629	-.336	.529	-.146	.714	.765	.688	.837	.314	2.001	10
3	8.576	-.215	2.705	-.449	.254	1.021	-.198	.441	-.619	.198	1.516	-.090	-.698	9
4	-8.975	-.962	-1.870	-1.966	-2.744	-.188	-.441	.044	-.907	-1.587	-.850	-.179	.165	8
5	-5.672	-2.786	-3.689	-.171	-2.086	-1.870	.966	-.406	-.373	-1.567	-2.001	.417	1.463	7
6	2.468	.076	-.726	2.983	.081	.314	.355	-1.120	.076	.608	1.115	.394	-.443	6
7	7.596	1.566	.509	.016	.139	1.535	.770	.974	-.932	-.629	1.772	-1.148	-4.165	5
8	-2.364	.124	1.811	-2.353	.512	.209	-.291	1.029	.430	-1.346	-.573	-.665	4.242	4
9	-3.377	-.415	1.168	-.157	1.716	-.686	-.124	-.654	-.463	.490	.016	3.697	3.316	3
10	.866	-.038	-.098	2.223	.503	-.039	-.057	-.365	-.490	.153	-.095	6.116	-.953	2
11	.762	.888	-1.547	.805	-.755	.185	-.322	.492	-.450	-.212	-.035	-.920	-1.789	1
12	.885	1.280	-.258	-.308	-.360	-.463	-.098	.453	.275	.213	.711	.446	-.183	
n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	

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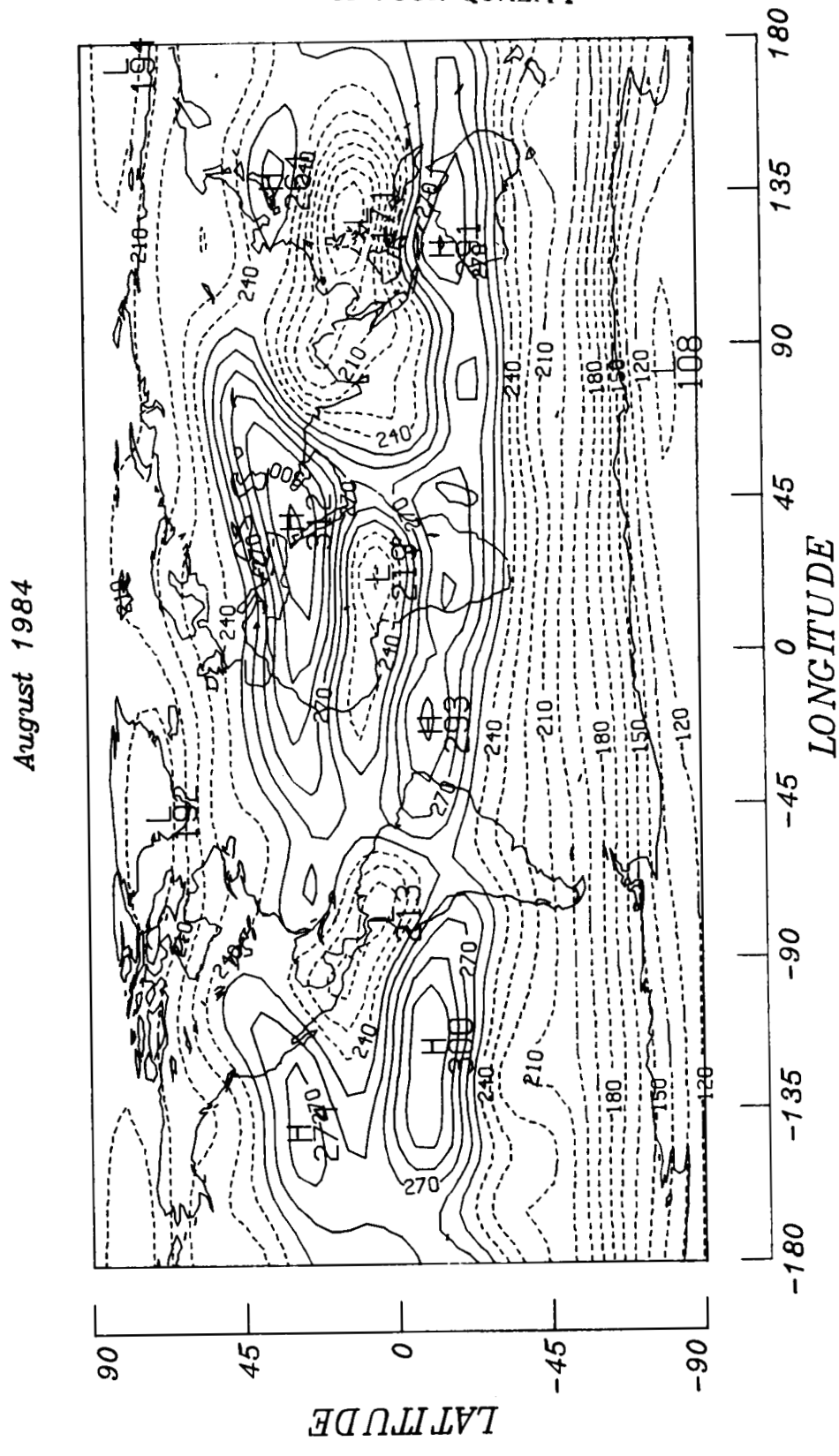

September 1984

C_n^m

n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	m/n
0	234.296	.140	-.397	-.476	.033	-.202	-.533	-.391	-1.004	-.421	.778	-.426	-.143	12
1	8.534	1.546	-.654	-.616	-.139	-.031	-.187	-.183	.672	.158	-.170	-.284	1.046	11
2	-26.774	2.905	3.672	.284	.265	.488	-.151	-.153	1.147	1.176	-.121	1.515	1.830	10
3	5.677	-.107	2.397	-.805	-.284	.644	-.110	-.273	-1.143	.383	.731	1.475	-2.518	9
4	-8.407	-.276	-1.167	-1.827	-4.776	-.087	.136	.285	-1.202	-1.661	-.938	-.809	-.585	8
5	-2.876	-1.919	-1.998	-.050	-3.338	-.763	.241	-.365	.725	-.303	-2.460	-.725	2.181	7
6	3.479	-.742	1.097	1.804	.197	.705	1.199	-.753	-.780	1.278	1.309	.945	1.513	6
7	6.634	1.070	.238	-.550	.502	.356	.552	.617	-2.215	-1.347	1.256	-.428	-3.636	5
8	-3.475	.198	-.170	-1.147	-.182	-.755	.025	.227	.218	-3.377	-.588	-1.801	1.947	4
9	-3.012	-.114	.480	.713	.184	-1.287	-.270	-.749	.204	.570	-.136	2.998	2.552	3
10	1.298	.305	.682	1.404	-.128	.038	.105	-.276	-.931	.092	-.329	6.971	.143	2
11	-.236	-.215	-1.282	-.507	-.519	.820	.393	.922	-.212	-.113	-.294	.065	-.688	1
12	-.042	.728	-.168	-.492	.804	.128	.186	.519	.639	.164	-.319	-.002	.718	

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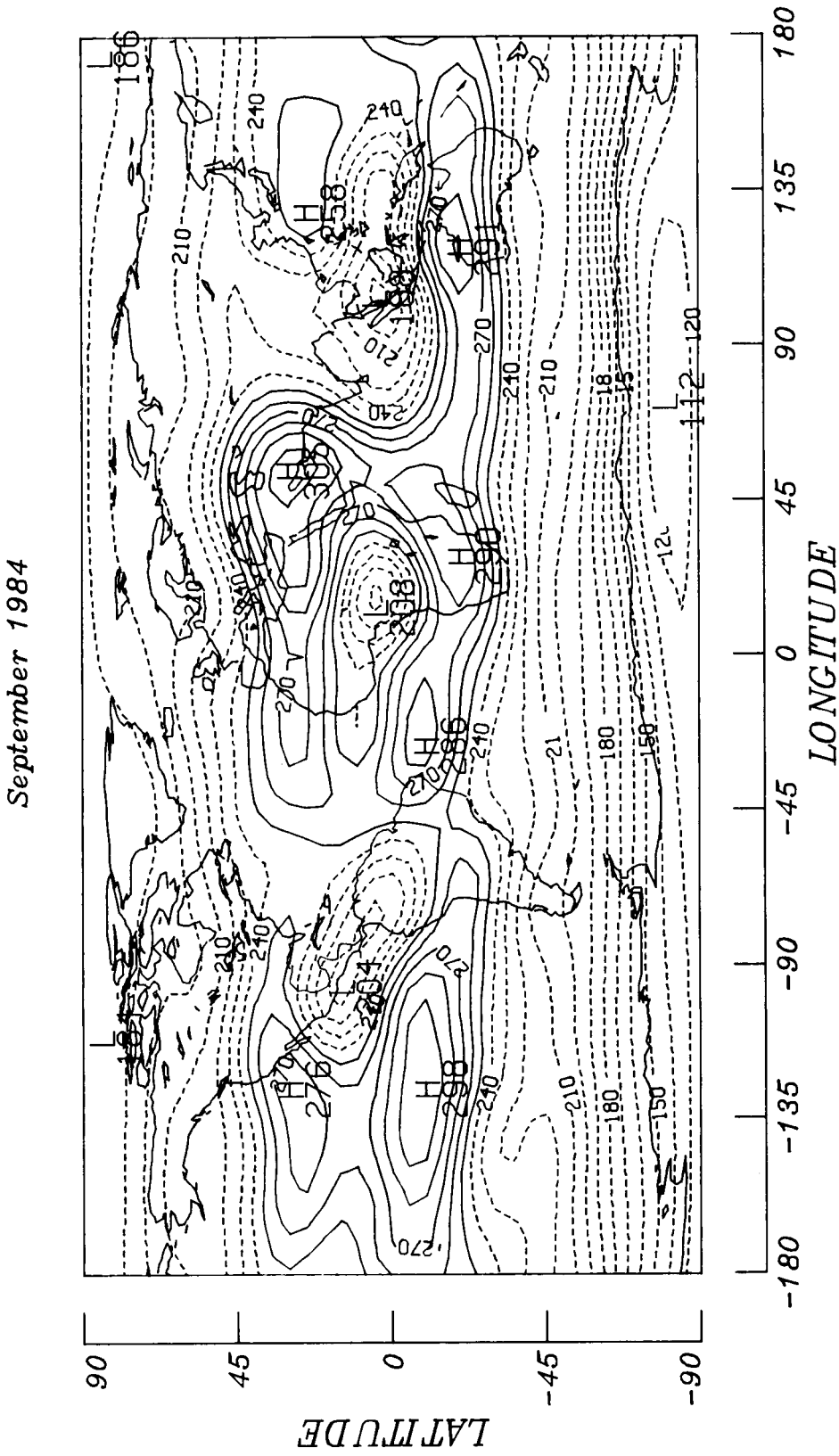

October 1984

C_n^m

		12	11	10	9	8	7	6	5	4	3	2	1	m/n
0	233.232	-.141	-1.028	-.639	-.094	-.771	-.476	.058	-1.113	-.772	.533	.384	-.048	12
1	2.578	1.644	1.001	-.304	-.243	-.434	.020	-.042	.202	-.294	-1.032	-.179	1.117	11
2	-26.294	3.396	.181	.444	-.244	.833	-.060	-.213	1.057	.241	-.863	.637	1.706	10
3	2.701	-.693	1.646	.829	-.166	-.169	.084	-.440	-.358	1.191	1.628	.658	-1.468	9
4	-7.324	-.489	.298	-2.526	-1.714	-1.023	.098	-.243	-.906	-.130	1.156	-.933	.457	8
5	-.664	-1.609	-.569	-.700	-.128	-1.200	.465	-.864	.814	-.262	-1.619	.944	1.865	7
6	5.068	1.311	1.575	2.669	.495	.219	.933	.056	.311	1.614	-.623	2.692	1.248	6
7	5.143	1.028	.289	-.257	-.434	.797	.126	-.379	-3.526	-.785	1.727	-2.158	-3.907	5
8	-4.357	-1.284	-.769	-2.419	.369	.254	.125	.172	1.809	-3.594	.220	-3.367	1.740	4
9	-2.502	-.611	.496	.147	.816	-.260	-.121	-1.516	-.350	1.010	-.214	3.292	.997	3
10	.887	1.240	.997	1.210	.161	-.284	.083	-.854	-.264	-.399	-.247	6.218	-.397	2
11	1.864	.353	-1.110	-.953	-.137	.156	.366	.566	.203	-.178	-.282	-.028	.265	1
12	1.356	-.370	-.367	-.217	.592	.165	-.527	.380	.077	.676	.280	-.273	.486	
n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	

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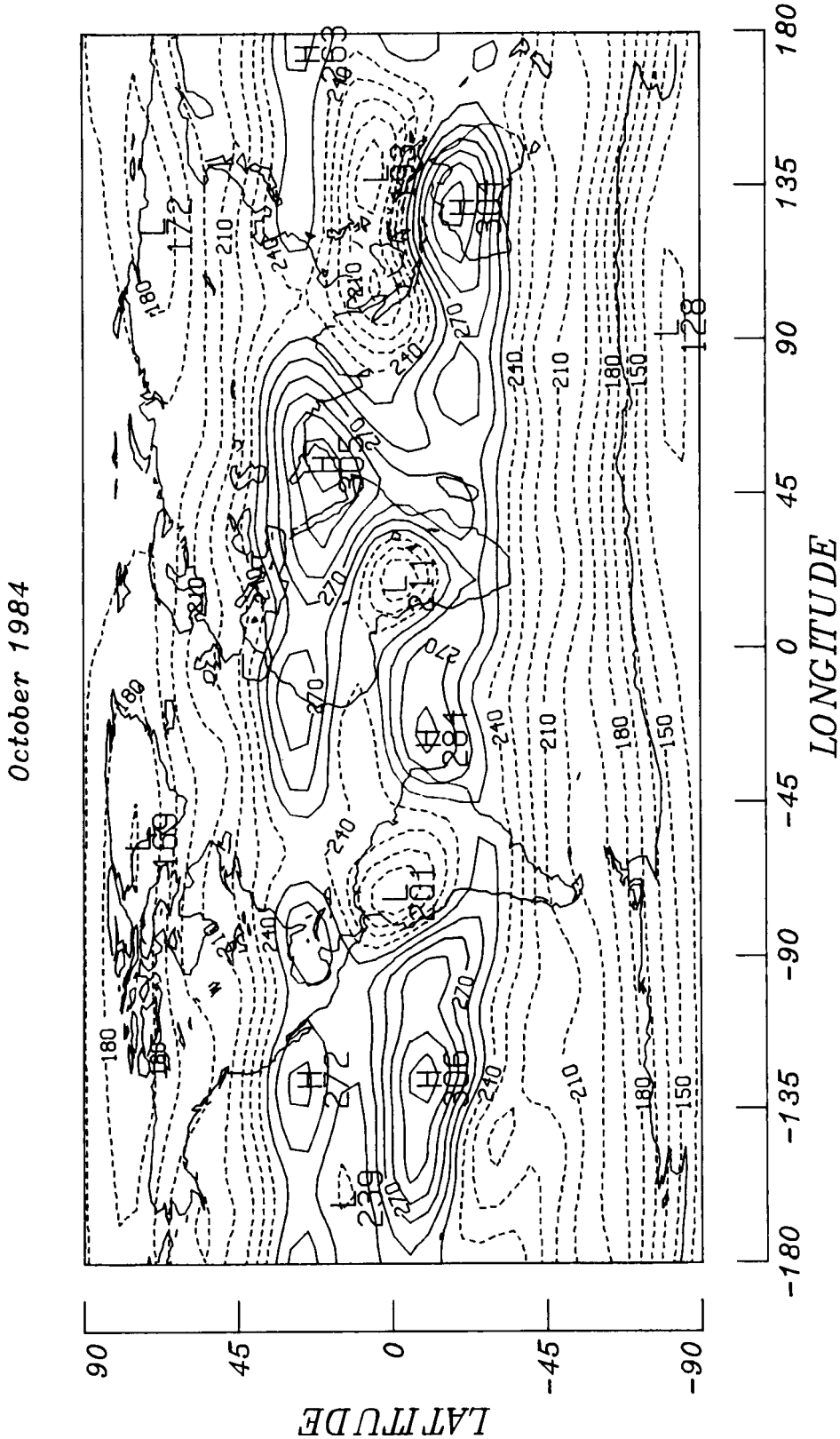

November 1984

C_n^m

		12	11	10	9	8	7	6	5	4	3	2	1	m/n
0	231.577	.700	-.330	.387	.140	-.364	-.114	-.599	-.906	-.006	1.580	-.151	-.074	12
1	-3.828	.253	.894	-1.014	-.112	.205	.051	-.120	.305	-1.134	-.228	-.633	1.641	11
2	-25.873	1.860	.648	.256	-.060	.460	.475	.171	.912	-.575	-1.838	.386	2.425	10
3	-1.090	-.008	1.904	2.855	-.970	-.551	.217	-.089	-1.117	2.112	.946	.279	-2.633	9
4	-5.102	.402	1.136	-2.330	-.819	-.380	.320	.281	-1.323	.242	2.019	-.504	-.795	8
5	2.595	-.357	.776	-1.448	-.065	-.686	.696	-.134	2.012	-1.773	-1.204	1.190	2.842	7
6	6.321	1.588	1.904	2.521	.752	-.403	.715	.649	.709	2.446	-1.183	2.689	1.304	6
7	1.176	.827	.729	.054	-1.045	.964	-.162	.759	-3.670	.601	1.692	-1.207	-3.699	5
8	-4.933	-1.282	-.795	-1.839	-1.507	.131	-.656	1.138	1.349	-3.276	-.324	-2.926	.066	4
9	-1.062	-.503	.121	-.017	.970	-.716	-.624	-1.096	-.521	.359	1.197	1.726	.113	3
10	1.796	.934	1.146	.590	1.418	-.108	.284	-.740	-1.490	-.553	.474	3.013	-.594	2
11	2.019	-.079	-.723	-.228	-.531	.328	.400	.341	.323	-.278	-.252	-.091	-1.333	1
12	.749	-.315	-.563	.730	-.428	-.203	-.275	.352	.613	.703	.255	.168	.418	
n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	

S_n^m

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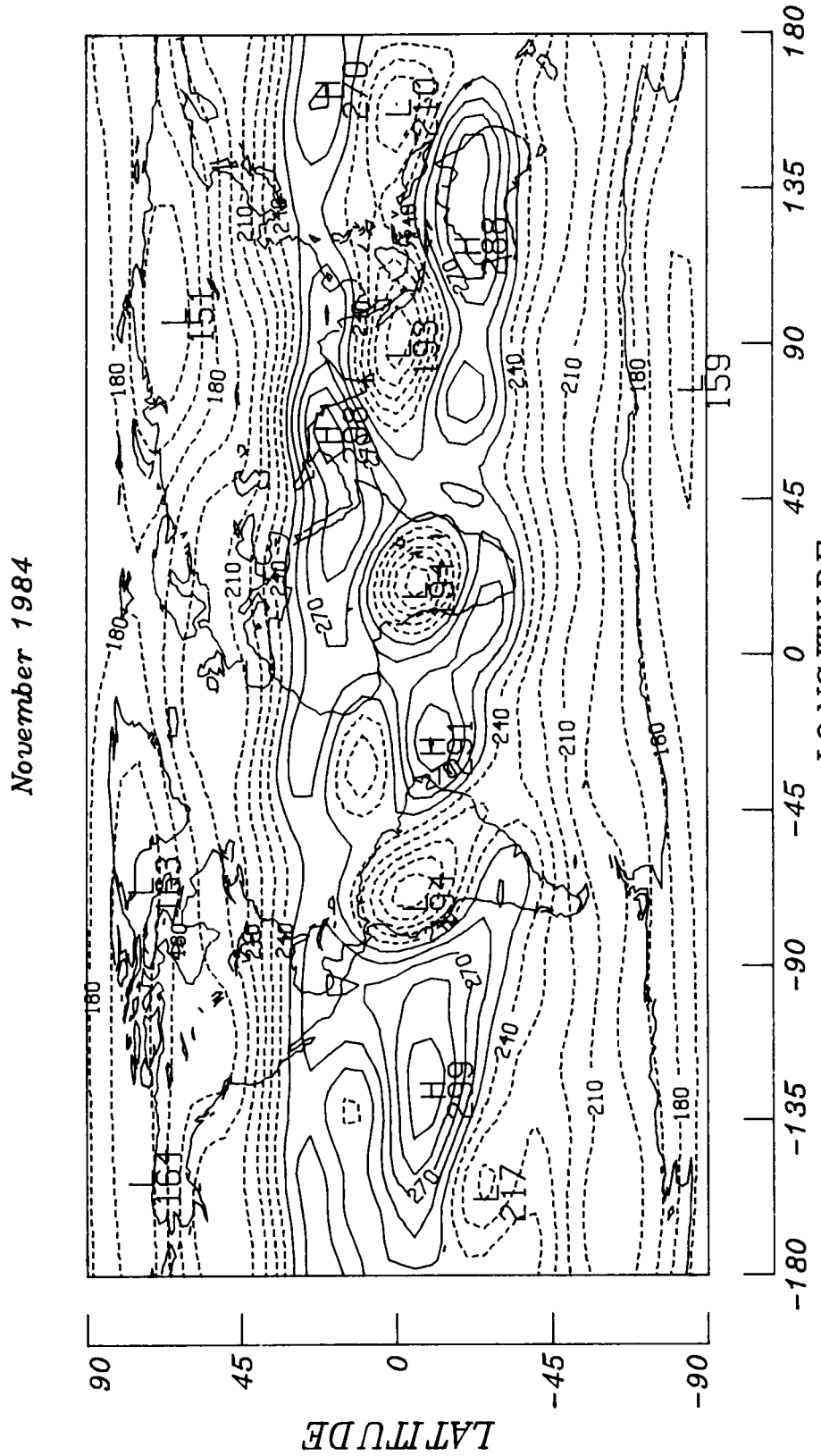


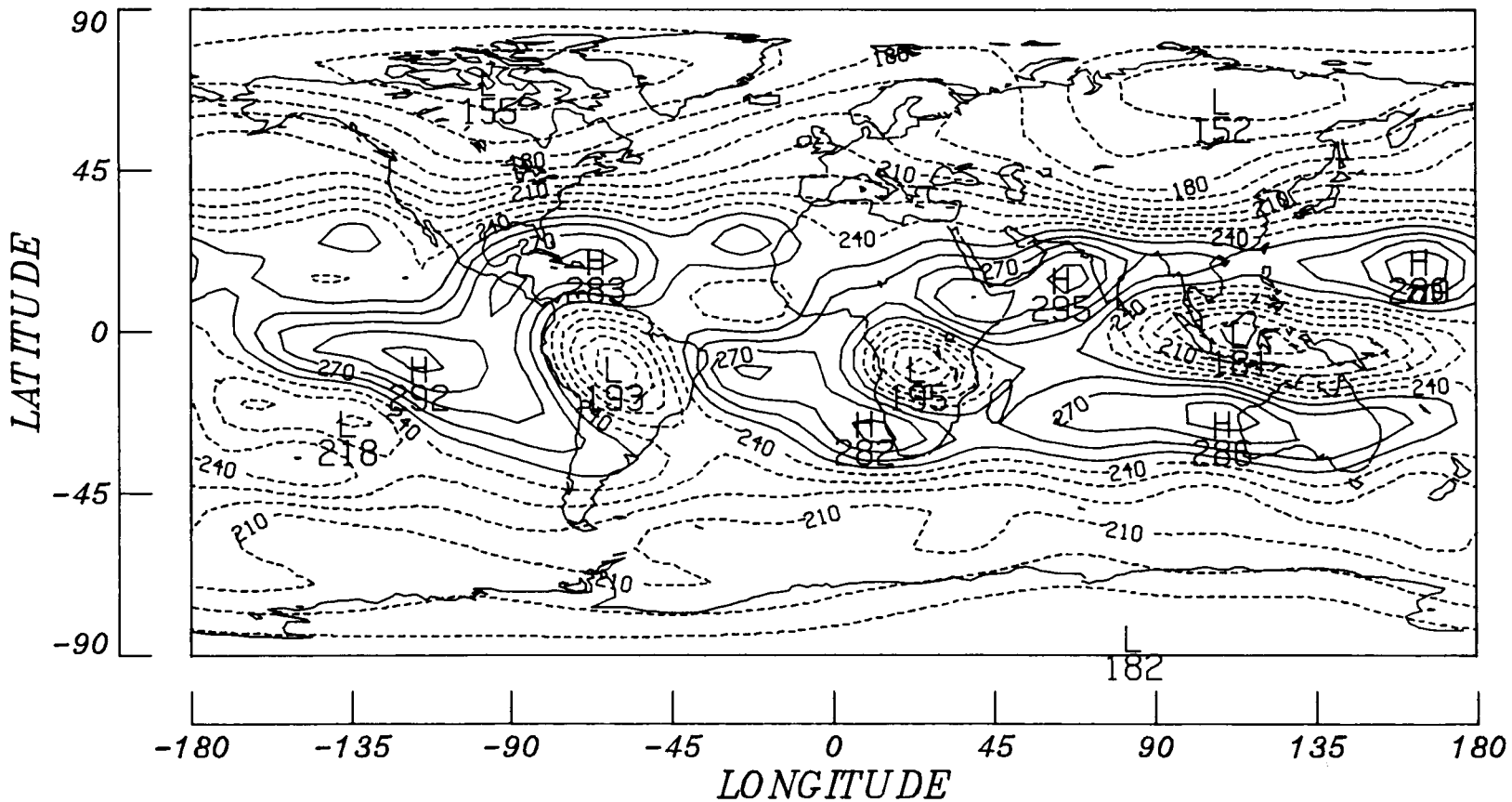
December 1984

C_n^m

		12	11	10	9	8	7	6	5	4	3	2	1	m/n
0	229.868	.274	.298	.013	.254	-.183	.096	-.634	-.285	.789	2.309	-.795	-.921	12
1	-8.391	2.348	.784	-.127	.088	.730	-.387	.836	.320	-1.017	-.057	-.103	1.116	11
2	-24.290	1.024	-.292	-.254	-.702	.135	.113	.526	.551	-.531	-2.247	2.020	2.772	10
3	-2.869	-.698	3.062	-.365	.056	-.766	.167	-1.087	-.523	2.114	.813	.381	-2.935	9
4	-2.917	1.312	2.682	-2.973	2.013	-.013	-.172	-.489	-1.131	-.581	2.040	-2.422	-1.745	8
5	4.293	.671	1.601	.031	-2.187	.980	1.454	-.410	.812	-1.905	-1.429	.293	3.734	7
6	6.491	-.144	2.438	3.367	-.380	.464	-.401	-.640	.921	2.643	-2.288	4.121	2.211	6
7	-2.016	.310	.192	-.097	.726	1.419	-.042	.443	-2.124	.944	1.219	1.325	-2.701	5
8	-4.043	-.266	-1.309	-1.578	-1.238	-.793	-.001	-.513	.830	-3.892	.524	-3.857	.892	4
9	1.730	.510	-.483	-.348	-.133	.058	-.132	-.920	-.182	.751	1.234	.291	.978	3
10	.944	.753	1.556	.391	1.908	.351	.150	-.292	-1.110	-.522	.354	3.816	-1.246	2
11	.872	-.760	-.075	-.115	-.122	-.679	.395	-.102	.209	-.614	-.622	.388	-2.437	1
12	.539	-.753	-.541	-.053	-.607	.289	.129	.557	.957	.282	.048	1.062	.055	
n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	

S_n^m

December 1984



January 1985

C_n^m

		12	11	10	9	8	7	6	5	4	3	2	1	m/n
0	230.020	.573	-.591	-.275	.152	.052	-.246	-.579	-.697	-.014	.958	-.476	.142	12
1	-10.346	-.551	1.232	-.423	-.724	.407	-.618	.416	-.041	-1.140	.839	.140	.313	11
2	-24.331	1.894	-1.570	.805	-.320	.465	-.182	.008	1.069	-.534	-.843	1.553	1.845	10
3	-1.406	.350	2.284	.863	.520	-.528	-.663	-1.264	-.559	2.285	.166	-.026	-1.274	9
4	-2.301	.166	2.940	-4.408	3.042	-.042	.715	.966	-1.425	-.546	-.025	-2.552	-.677	8
5	6.334	-.073	.290	-1.511	-2.461	-1.579	-.023	.210	1.328	-3.557	-2.110	.216	1.612	7
6	6.703	.239	.802	5.157	-.560	-.479	.374	-2.298	1.416	.776	.194	4.138	.477	6
7	-4.764	.335	.749	.853	1.507	.647	-.795	.538	-3.087	1.043	1.680	.209	-2.070	5
8	-4.461	.293	.059	-3.204	-.611	.493	1.298	.006	.954	-1.515	-2.589	-3.635	1.272	4
9	3.547	.163	-.027	-.786	.474	-.356	.809	-.770	-.849	.742	.480	.863	.134	3
10	1.087	-.296	.897	.994	1.687	-.090	-.234	-.254	-.692	-.382	.218	2.237	-1.516	2
11	-.403	-.175	-.259	.270	-.281	.071	.164	.499	-.078	-.376	-.167	.132	-2.947	1
12	.156	.097	-.218	.537	-.394	-.022	-.217	.371	.438	.175	-.581	.926	.205	
n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	

S_n^m

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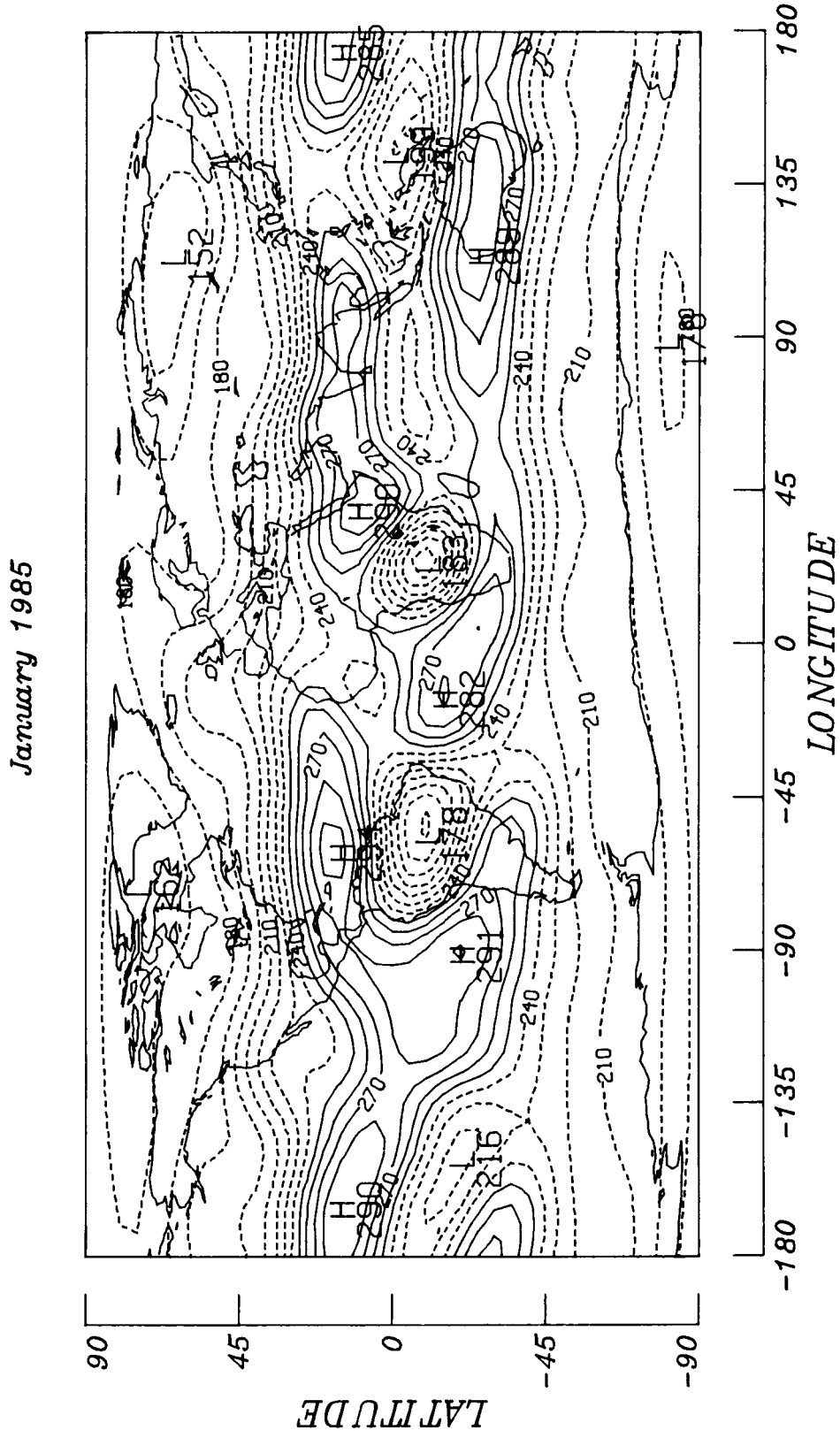

February 1985

C_n^m

		12	11	10	9	8	7	6	5	4	3	2	1	m/n
0	230.327	-.216	-.306	-.177	.125	.286	-.238	.463	-.140	.283	.381	-1.695	.447	12
1	-9.067	3.509	.184	-.296	-.215	.224	.068	-.211	.045	-.746	1.043	-.156	.789	11
2	-27.832	1.077	1.379	.480	.004	.542	.735	-.287	.728	-.642	-1.141	1.911	2.517	10
3	-2.767	-.667	2.262	1.427	-.389	-.223	.017	-.209	-.751	1.570	-.111	1.352	-2.299	9
4	-4.719	.012	.332	-3.427	2.404	.102	.129	.274	-.864	.953	1.981	-1.353	-1.271	8
5	8.036	-1.689	1.007	-.872	-.639	.087	-.247	.353	2.047	-1.869	-1.384	-1.934	3.160	7
6	5.810	.719	3.343	4.576	-.919	.289	.596	-.515	1.405	.224	-2.611	1.837	3.953	6
7	-6.359	2.500	-.187	-.202	-.209	1.224	.326	.013	-2.365	.303	.726	1.114	-3.466	5
8	-6.751	-.187	-1.190	-1.987	.371	.507	-.036	-.089	1.183	-2.581	.080	-2.359	-1.287	4
9	3.333	-.826	.554	-.232	.428	-.221	-.112	-.981	-.484	.282	.359	.258	1.986	3
10	1.649	.697	.514	-.729	1.094	-.153	.953	-.241	-.446	-.274	.167	2.810	1.267	2
11	-.391	.145	-.735	.173	.018	-.234	-.297	.336	-.033	.007	-.197	-.248	-4.713	1
12	.397	-.210	.348	.844	-.610	.403	-.824	-.182	.148	.030	.905	.448	.229	
n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	

S_n^m

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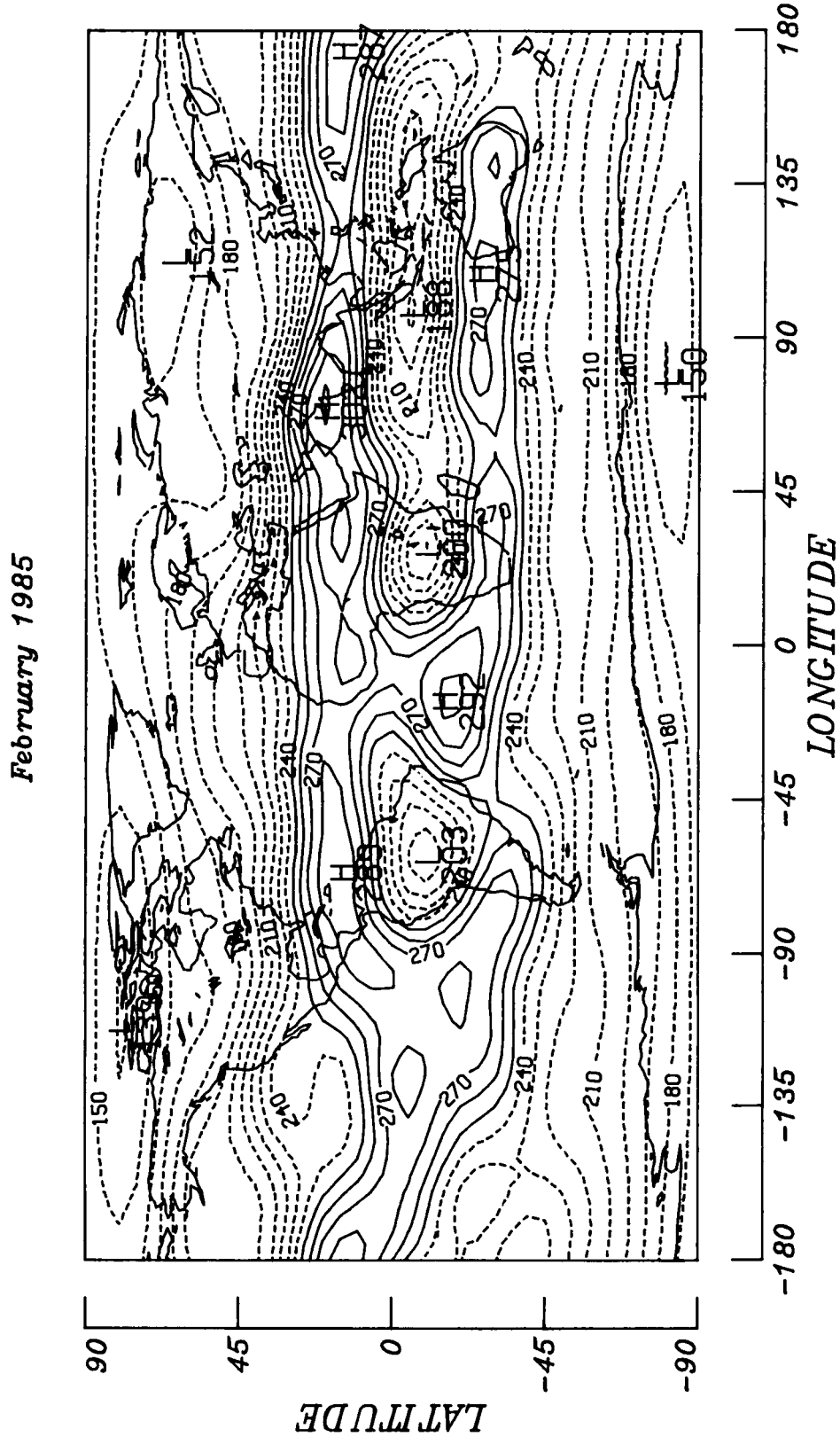

March 1985

C_n^m

		12	11	10	9	8	7	6	5	4	3	2	1	m/n
0	229.858	.069	-.387	-.655	-.469	-.154	.071	-.284	-.356	-.018	.725	-1.174	1.136	12
1	-5.599	2.170	.322	-.126	.298	.625	-.423	.201	.112	-.207	.123	-.343	.985	11
2	-27.631	1.249	-3.241	.225	.199	-.464	.165	-.232	.772	-.284	-2.077	2.129	1.644	10
3	.120	-.515	1.847	1.315	.077	-.389	.427	-.795	-.586	.136	.706	1.814	-2.844	9
4	-6.152	1.142	3.606	-3.312	1.581	-.694	-.811	.080	-1.712	-.592	2.876	-1.991	-.638	8
5	5.658	-.081	.323	-1.526	-.678	.347	-.003	1.054	.899	-.347	-1.504	-1.960	1.509	7
6	4.540	-.021	-.356	3.913	.213	-.535	-.800	-.033	.815	.951	-3.048	3.634	2.525	6
7	-3.786	1.143	-.808	1.160	.199	1.210	.041	.085	-3.801	-.930	1.379	2.107	-1.207	5
8	-5.622	.172	.463	-1.665	-1.172	.942	-.388	-.275	.557	-3.202	.421	-2.025	1.502	4
9	2.450	-.548	1.196	-.490	-.482	-.743	-.141	-.224	.336	1.562	-.456	-.100	-1.217	3
10	2.243	.388	1.165	-.371	1.077	-.636	.578	.003	-1.527	-.515	-.781	1.802	-1.209	2
11	.010	.025	-.652	-.591	.380	-.064	.219	-.175	.302	-.333	-.498	.364	-.802	1
12	-.093	-.121	-.473	1.312	-.344	.124	-.172	-.268	.867	.603	.995	-.212	-.027	
n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	

S_n^m

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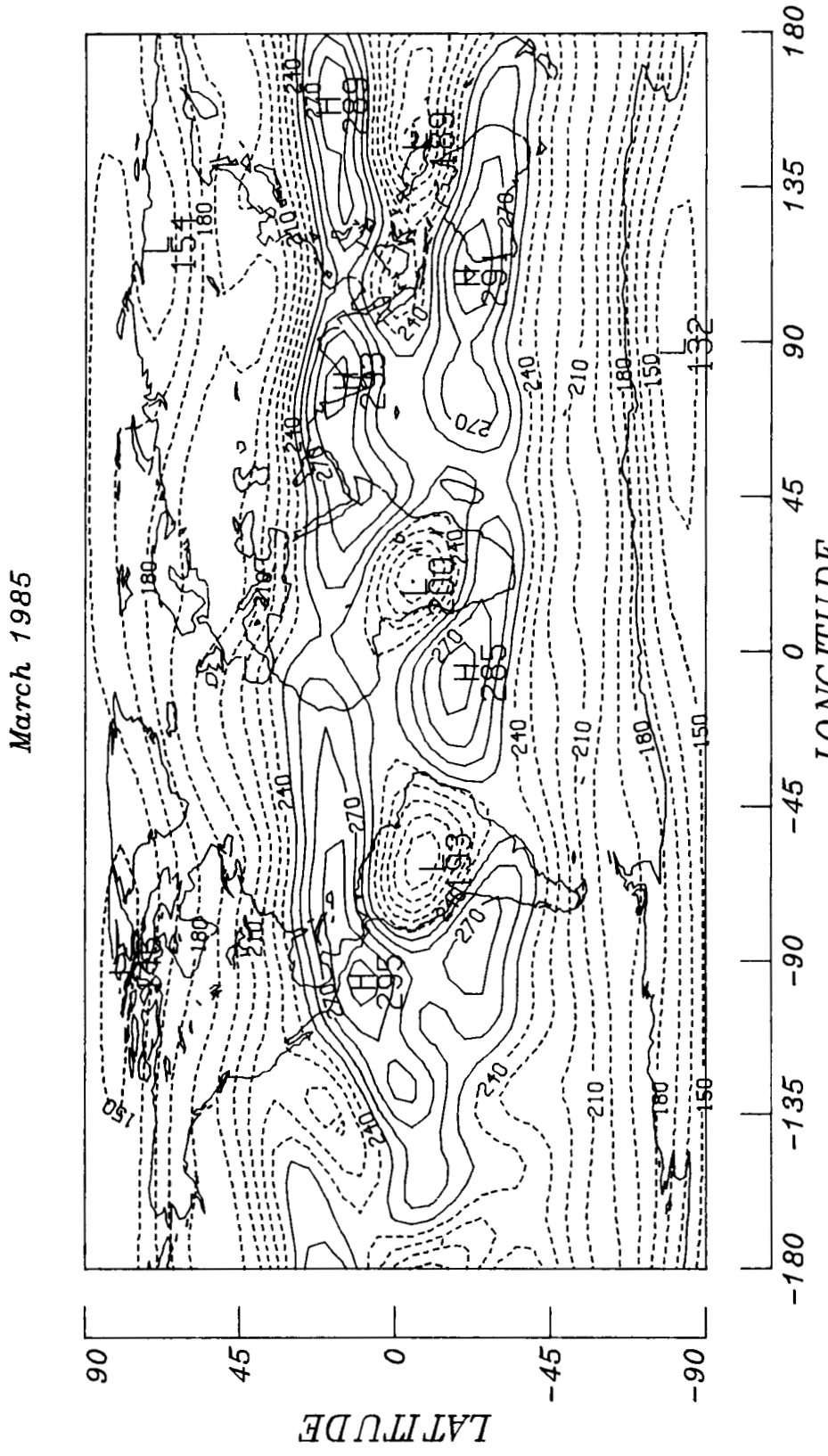

April 1985

C_n^m

		12	11	10	9	8	7	6	5	4	3	2	1	m/n
0	230.368	-.183	-.296	-.150	.029	.161	-.200	-.023	-.728	-.199	.231	-.750	1.177	12
1	-.164	3.097	-.303	-.240	.021	-.517	.330	.390	1.146	.060	.068	-1.091	1.348	11
2	-26.899	2.777	-1.457	.043	.397	.521	.447	-.597	.481	.220	-.248	1.199	.762	10
3	2.709	-.046	.498	.166	-.417	.139	-1.333	-.707	-.918	.099	.457	1.456	-2.658	9
4	-7.433	-.667	.167	-1.902	.562	-.724	.123	1.133	-.817	-1.032	.287	-.866	.640	8
5	2.781	-1.693	-.468	.185	-.986	.141	.815	.867	.487	-.051	-.807	-1.647	1.206	7
6	4.597	.930	1.658	3.119	-.482	.548	.202	-.042	.617	1.192	-.039	1.457	1.832	6
7	-.395	2.610	-.053	-.423	.963	.323	-.272	.331	-2.250	-.822	.323	.775	-2.057	5
8	-6.013	-.790	-.429	-1.347	.096	-.416	-.342	-.213	.995	-3.453	-.770	-1.516	1.602	4
9	.655	-1.288	1.061	.425	-.616	-.031	.758	-1.468	-1.511	.184	.398	1.026	.351	3
10	2.456	.924	.946	-.008	.472	.014	.788	-.251	-1.407	.074	-.588	3.894	-.294	2
11	-.154	.590	-.757	-.314	.293	-.159	-.458	.987	.479	.259	-.369	-.654	-.997	1
12	-.421	.279	-.488	.603	-.423	.427	-.518	-.248	.073	.254	.650	-.097	.681	
n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	

S_n^m

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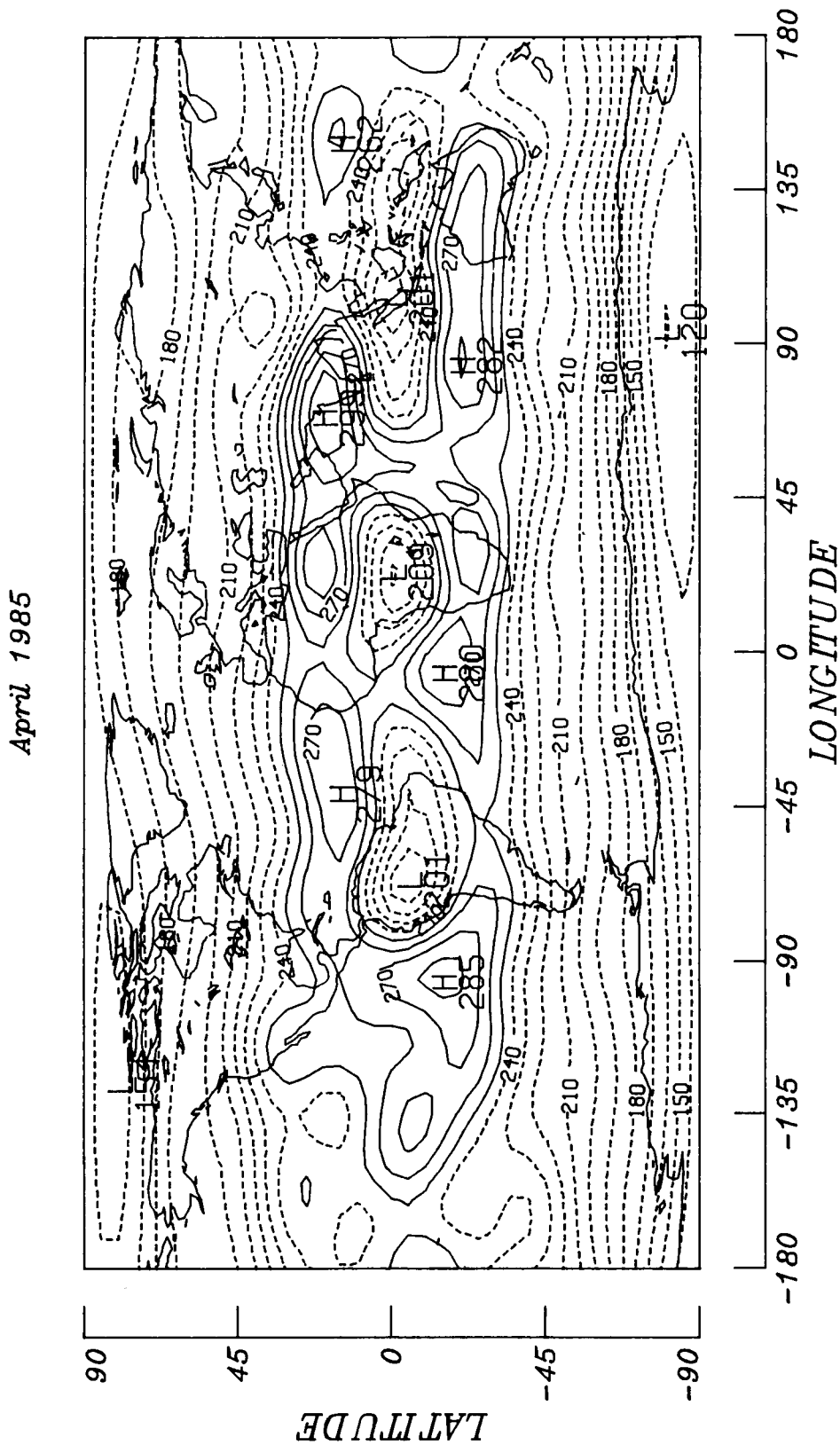


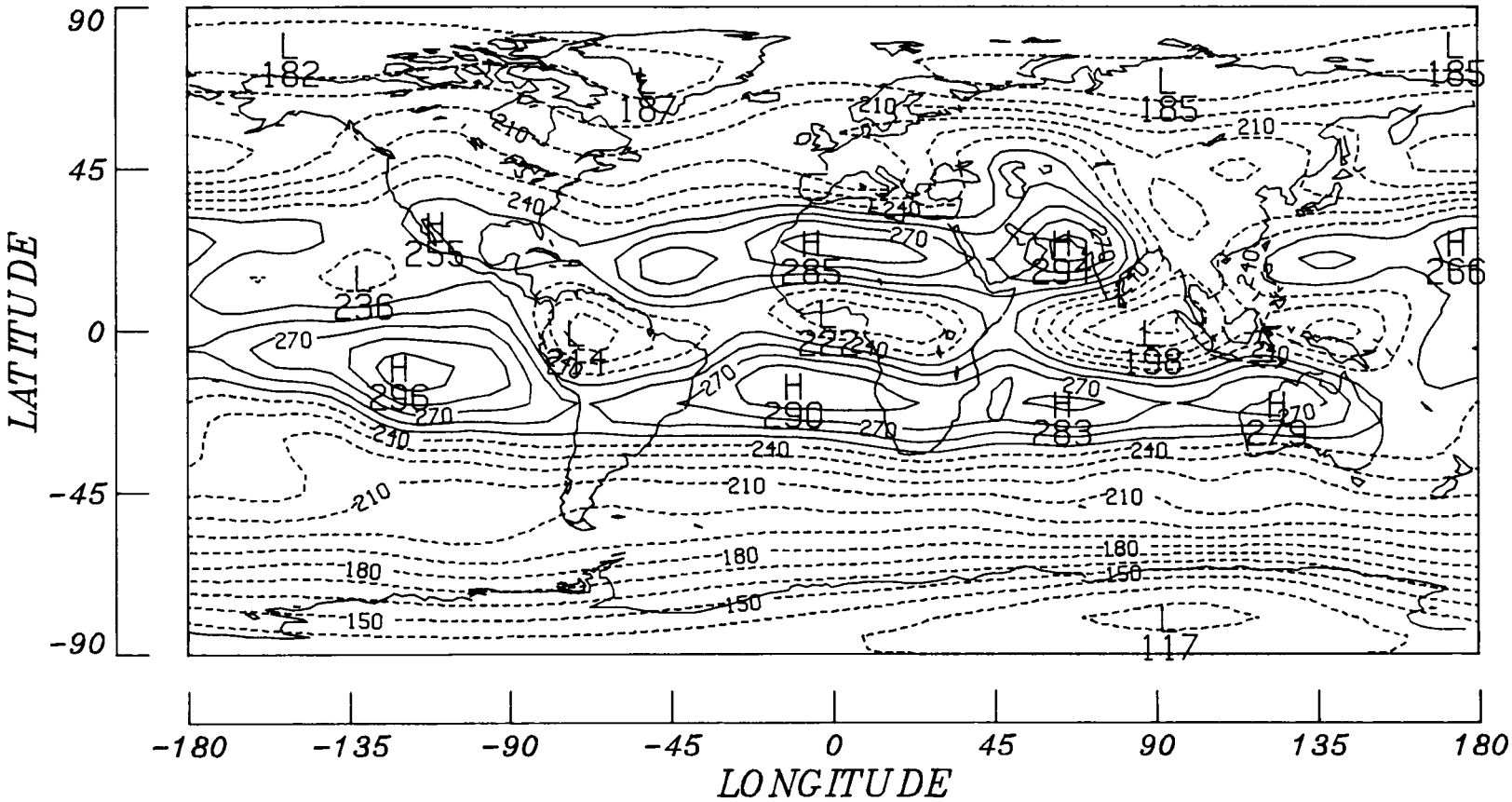
May 1985

C_n^m

		12	11	10	9	8	7	6	5	4	3	2	1	m/n
0	231.593	-.109	-.236	-.764	-.023	.210	-.325	.555	-.294	-.250	-.234	-.491	.471	12
1	5.538	2.817	.596	-.100	-.312	-.020	.169	.053	.239	-.024	.247	-.796	1.550	11
2	-26.218	1.717	1.280	.007	-.270	.099	.039	-1.092	.504	-.107	-.577	.848	.968	10
3	5.405	.201	.581	.809	-.078	-.401	.167	-.562	-.947	.527	.646	.834	-2.093	9
4	-6.240	1.076	-1.260	-1.859	-1.121	-.726	.643	.788	-1.160	.078	.981	-1.330	-.728	8
5	-.804	-2.764	-2.122	-.957	-.917	-1.521	1.274	.914	.162	-.850	-.303	-1.343	.639	7
6	4.136	-.616	.542	2.658	.218	.662	1.366	.656	-.824	-.454	-.024	1.491	1.677	6
7	3.188	3.111	1.248	.803	-.147	1.090	.372	.045	-2.409	-.798	.629	.844	-4.065	5
8	-5.744	-.848	.500	-1.062	-.594	-.436	.444	-.248	.154	-2.903	-.145	-.233	1.726	4
9	-1.251	-2.251	1.336	.248	-.894	-1.384	.664	-.451	-.050	.247	1.491	1.468	1.819	3
10	3.689	.912	1.045	.774	.161	-.513	-.250	.142	-.557	-.286	-.542	3.388	.136	2
11	1.049	1.296	-1.798	-.569	.790	.435	-.171	.705	-.073	-.134	.485	-.565	-1.603	1
12	.167	.338	-.812	.061	.880	.544	.243	-.066	-.177	.078	.475	-.274	.067	
n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	

S_n^m

May 1985



LATITUDE
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L 187
L 185
L 185
H 255
L 236
H 296
L 214
H 285
L 222
H 290
H 294
L 198
H 283
H 279
H 266
L 117
210
240
270
180
150

June 1985

C_n^m

		12	11	10	9	8	7	6	5	4	3	2	1	m/n
0	234.820	.565	-.244	-.633	-.287	-.330	.286	.237	.017	-.044	-.125	.074	-.052	12
1	8.872	5.318	-.331	-.846	-.155	-.660	.257	-.239	.384	.365	-.251	-.414	-.392	11
2	-25.384	3.341	3.333	.313	.184	.724	-.271	-.259	.061	.375	.577	1.635	1.132	10
3	7.354	-1.235	2.140	-1.094	.163	.961	-.162	.947	-.595	.184	1.687	1.474	-.060	9
4	-5.102	.448	-1.944	-2.363	-2.937	.359	.414	1.042	-.812	-.578	-.113	-.986	-.454	8
5	-3.168	-3.524	-4.560	-1.057	-2.561	-.781	.639	-1.136	.115	-.535	-2.204	-1.573	.638	7
6	4.497	-1.665	-.606	2.922	-.578	-.339	1.845	-.207	-.277	-.224	-.416	-.144	.190	6
7	6.343	1.788	1.877	.868	.639	.114	1.479	.688	-1.983	-1.809	1.955	-1.229	-4.234	5
8	-3.234	.029	1.622	-1.291	.251	.202	.853	.513	-.076	-2.847	.289	-.467	4.233	4
9	-4.010	.110	.685	-.639	-.370	-.566	.951	-.231	-.762	.413	.062	4.367	2.711	3
10	.923	.681	-.101	.530	-.162	-.386	.516	-.302	-1.242	-.164	-.441	8.025	-.630	2
11	1.219	-.652	-1.576	.256	.318	.802	-.154	.597	-.637	.468	.556	-.859	-1.157	1
12	.963	-.684	-.194	.593	1.372	.754	.031	.605	-.312	.462	.301	.173	.690	
n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	

S_n^m

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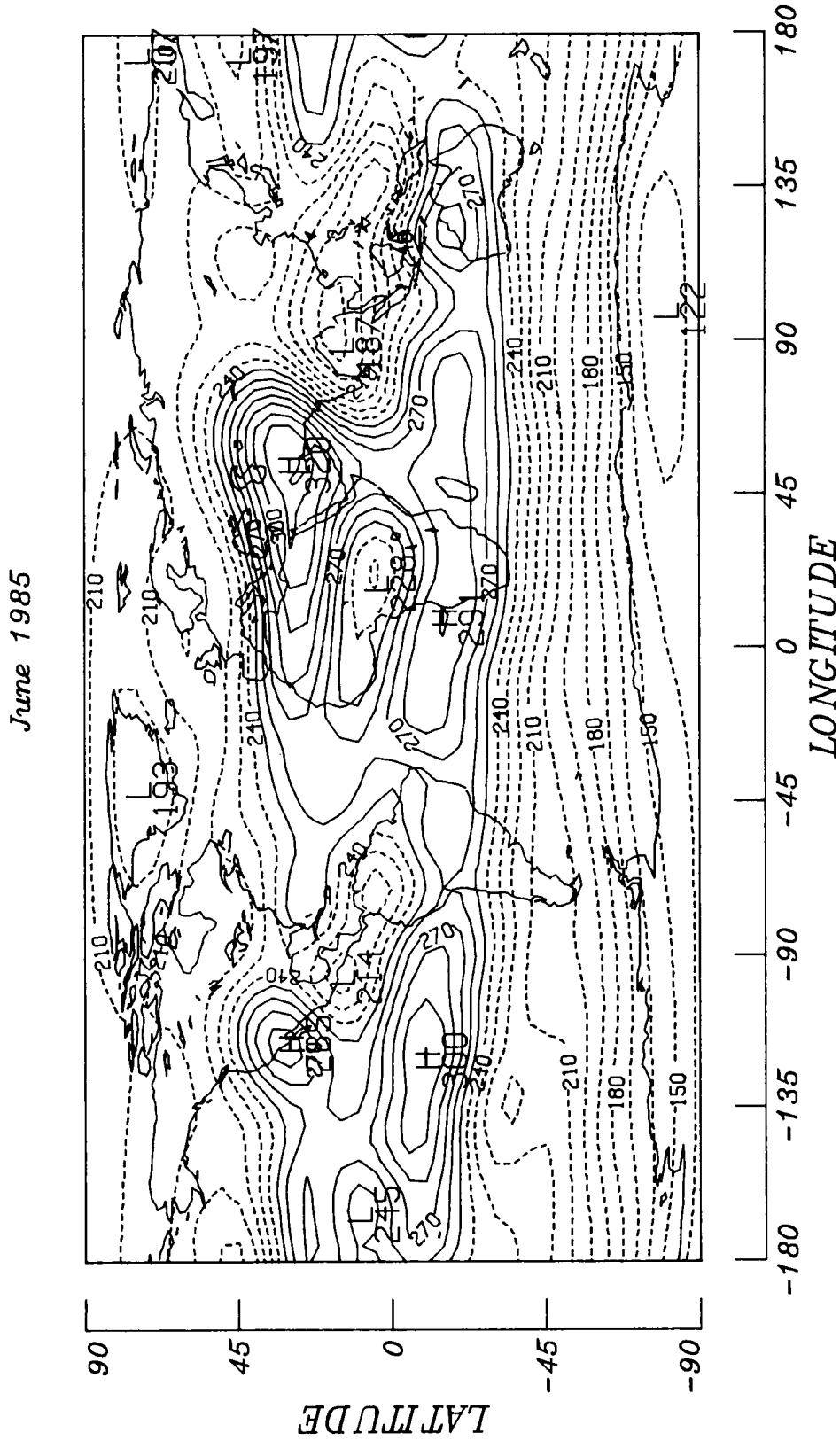

July 1985

C_n^m

		12	11	10	9	8	7	6	5	4	3	2	1	m/n
0	235.395	-.423	-.431	-.623	-.212	-.128	-.049	.295	-.693	-.242	-.444	-.190	-1.016	12
1	12.311	3.793	.644	-.331	.203	-.231	-.416	.049	-.042	1.631	-.322	-.095	.110	11
2	-24.122	3.130	4.044	.037	.332	.768	-.544	.226	.707	1.381	1.097	1.597	1.524	10
3	9.017	-.072	2.335	.027	-.086	.930	.233	1.203	.247	-.455	1.262	1.109	.125	9
4	-8.157	.080	-1.197	-1.116	-4.476	-.118	.357	.769	-.335	-1.767	-.655	-1.417	-.723	8
5	-4.477	-3.497	-3.425	.065	-2.817	-1.133	.904	-.379	.471	-.892	-1.809	-1.788	.487	7
6	4.148	-1.996	-1.085	2.431	-.620	-.507	1.319	.326	-.624	.097	.843	.984	.878	6
7	7.871	1.328	.381	-.054	.531	.211	1.568	.650	-2.133	.121	2.108	-.288	-3.820	5
8	-2.757	.847	1.299	-1.712	1.130	-.005	.509	.452	.318	-.618	-.206	.206	3.646	4
9	-3.245	.858	1.708	.091	.986	-.302	.688	.015	.058	.571	-.420	3.323	3.213	3
10	.917	.415	1.036	1.643	-.516	-.125	-.088	.189	-.372	-.058	-.227	5.323	-.791	2
11	.052	-.819	-1.815	-.570	-.948	-.209	-.483	.306	-.157	-.054	-.183	-.377	-2.319	1
12	.631	-.151	-.678	-1.587	.516	-.206	.585	.284	.123	-.373	.096	.255	-.029	
n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	

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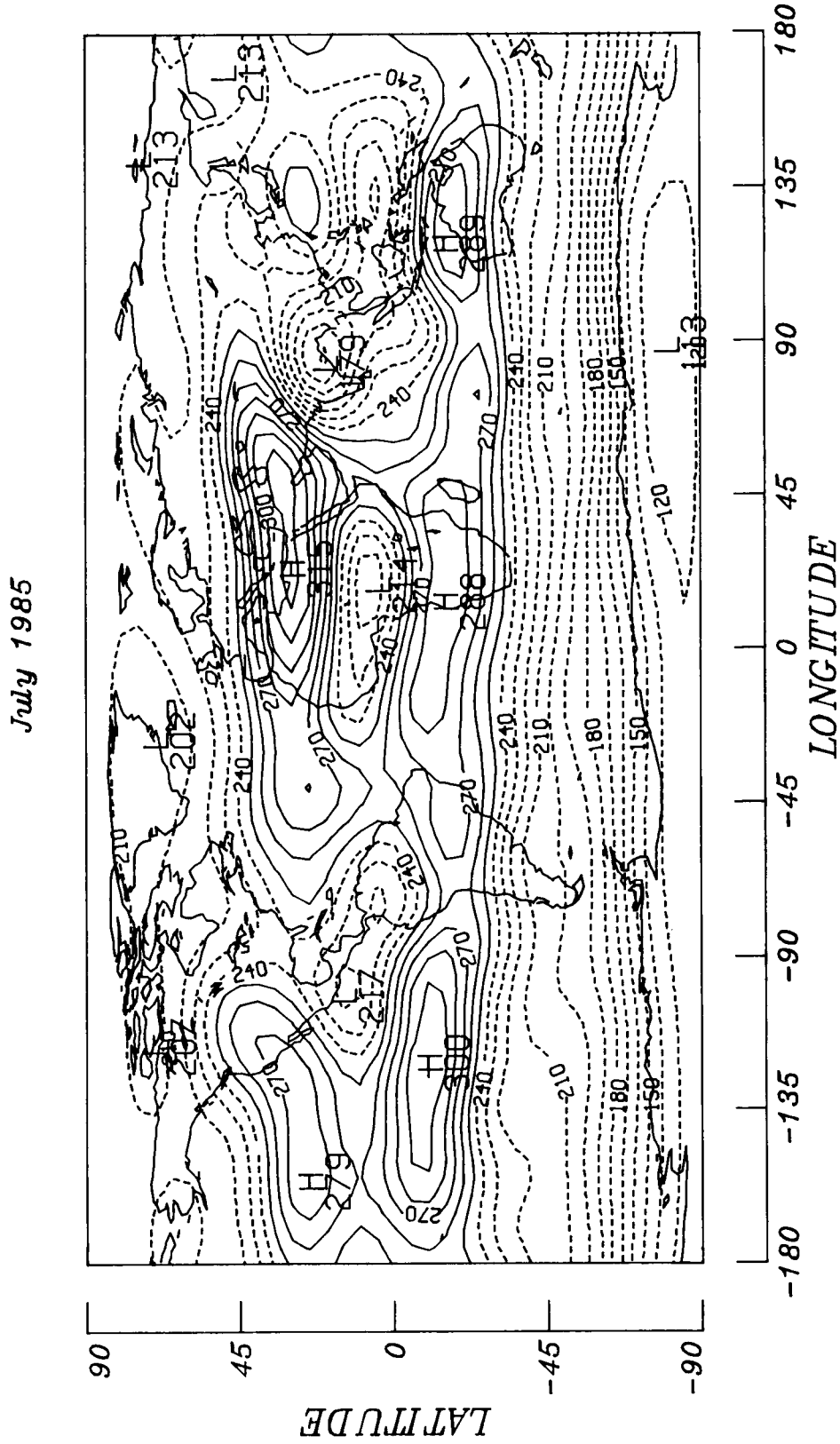

August 1985

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		12	11	10	9	8	7	6	5	4	3	2	1	m/n
0	236.428	.054	-.238	-.382	-.474	-.080	-.388	.133	-.301	-.467	.199	.190	-.662	12
1	11.633	3.244	.404	.200	.131	.301	-.765	-.457	.252	1.023	.638	-.304	-.091	11
2	-24.799	3.704	4.485	.638	.276	.801	-.145	-.085	.745	.475	.286	.561	2.103	10
3	9.343	.806	2.773	-.324	-.404	.426	.113	.603	-.248	-.227	.742	-.351	-.637	9
4	-9.847	-.906	-1.256	-1.772	-4.486	-.121	.492	.221	-.883	-.604	.239	-.101	-.144	8
5	-6.119	-3.211	-2.740	-.818	-1.795	-2.717	.901	-.595	.166	-.141	-1.764	-.861	.226	7
6	4.234	-.529	-.668	2.980	-.091	-.466	1.172	-.004	.139	-.089	.561	-.711	-.278	6
7	7.554	1.837	-.718	.359	-.834	.519	1.033	.921	-1.880	-.845	3.006	.058	-3.526	5
8	-2.706	.167	1.060	-2.398	-.079	.029	.495	1.012	-.292	.334	-.059	.562	4.063	4
9	-3.497	-.476	1.310	-.769	.675	-.445	-.110	-.052	-.772	.080	-.403	3.349	3.845	3
10	.146	.111	.816	.974	-.508	.253	-.436	.355	-1.054	-.251	.395	5.456	-.978	2
11	.647	-.235	-.826	.769	-.555	.349	-.410	.686	-.140	-.424	-.060	-.403	-3.016	1
12	.855	1.340	-.659	.502	.535	-.456	.025	.096	.689	-.651	.145	-.161	-.187	
n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	

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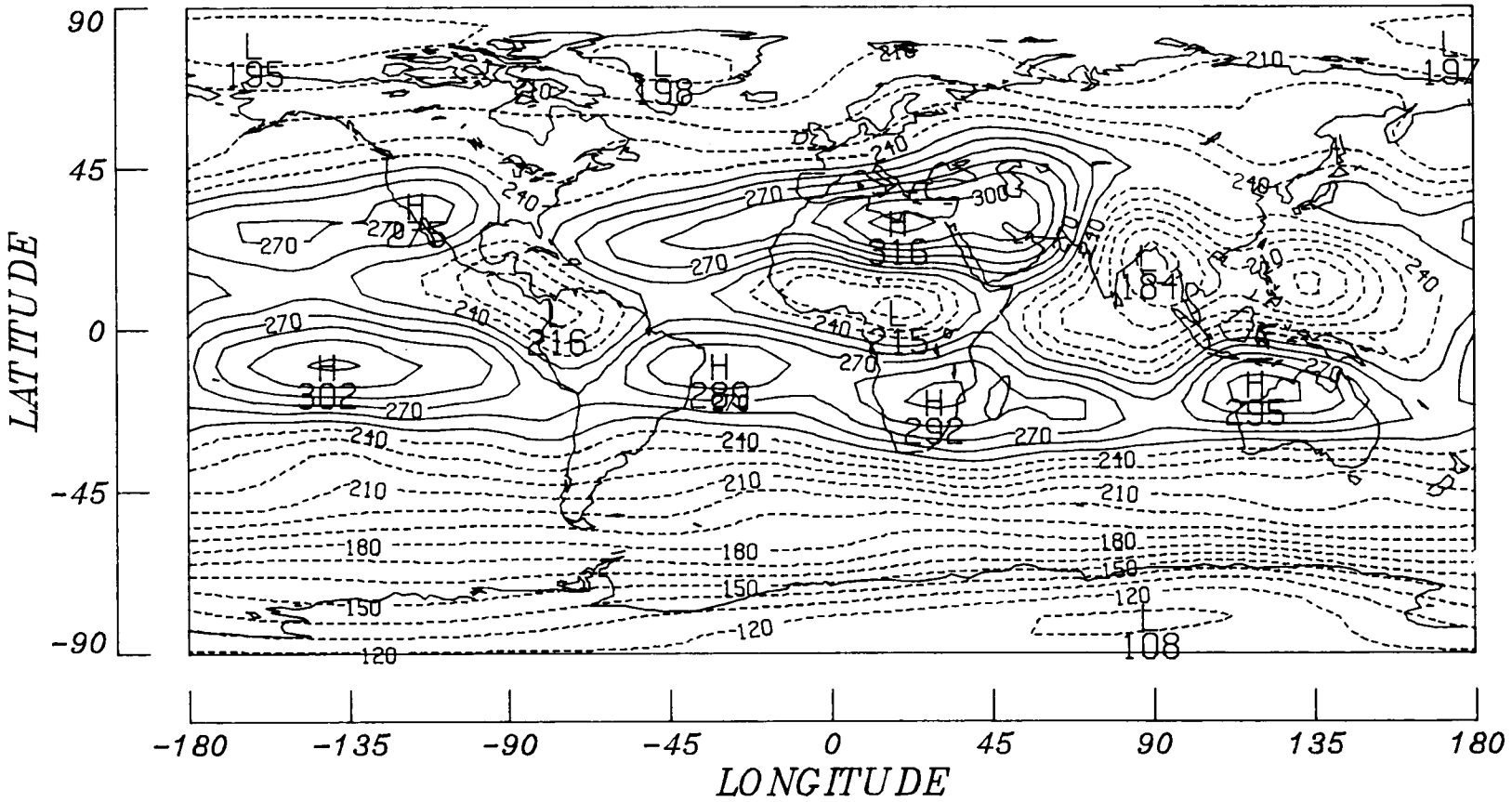
August 1985



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September 1985

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		12	11	10	9	8	7	6	5	4	3	2	1	m/n
0	234.821	.025	-.218	-.503	-.736	-.623	-.619	.228	-.593	-.868	.575	.036	.260	12
1	8.406	2.099	.669	-.103	-.369	-.231	.093	-.364	.709	-.331	.521	.044	.172	11
2	-27.187	3.842	3.233	.098	.242	1.273	.522	-.343	1.275	-.171	.366	.817	1.367	10
3	7.003	.133	2.473	-1.121	-.411	.758	-.301	.111	-.412	.361	1.950	.749	-1.776	9
4	-9.283	-.616	-1.004	-3.204	-4.083	.276	.585	.795	-.667	-.666	.038	-.510	-.054	8
5	-3.914	-2.013	-2.536	-.349	-1.333	-1.492	1.209	-.638	.935	-.179	-3.140	-1.049	1.895	7
6	4.320	-.528	.490	2.960	.224	1.255	1.703	-.380	.254	.633	-.344	.429	.576	6
7	6.484	.877	-.038	.215	-.057	1.945	.744	.822	-3.202	-1.574	2.097	-.866	-4.315	5
8	-3.687	-.258	.052	-1.693	.523	.484	.149	.667	.402	-2.140	.590	-1.414	3.119	4
9	-3.729	.371	1.073	.321	1.051	-.200	.219	-.738	-.118	.810	.384	3.411	2.417	3
10	1.104	1.252	.301	.706	.164	.884	.067	-.381	-1.160	.193	-.401	5.902	-.087	2
11	1.180	-.373	-1.877	-.643	-.723	.671	-.287	.409	-.320	-.149	-.248	-.211	-1.553	1
12	.663	-.242	-.113	-.137	.018	-.290	-.524	-.130	.155	.270	.105	.238	.066	
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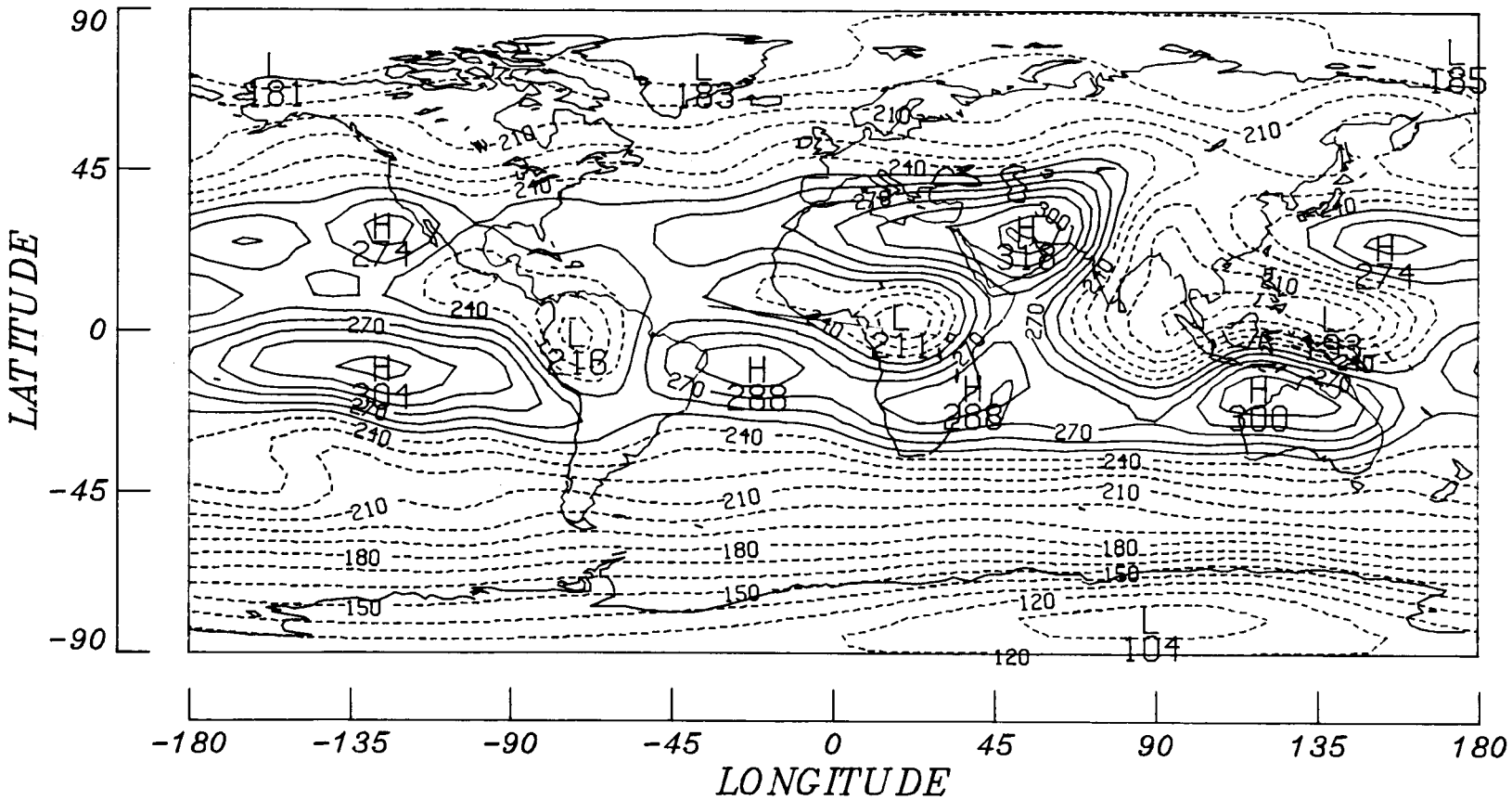
September 1985



October 1985

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0	232.285	.398	-.011	-.381	-.082	-.245	.219	.128	-.697	-.423	.427	-.049	.207	12
1	2.697	.613	.114	-.242	.124	.017	.388	.033	.169	-.755	-1.305	-.406	1.336	11
2	-27.416	3.471	2.359	.513	-.414	.480	-.367	-.240	.967	.491	.034	1.166	1.902	10
3	2.317	.005	2.678	.117	.231	-.042	-.053	-.099	-1.080	.865	1.454	.708	-2.600	9
4	-7.634	-.064	-.403	-1.186	-1.953	-.455	-.061	.034	-1.369	-.638	.754	-.766	-.574	8
5	-.376	-1.110	-.748	-.732	-.999	-.485	.758	-.431	1.577	.695	-1.484	.234	3.406	7
6	3.519	.651	1.884	3.010	.336	.062	1.224	-.610	.942	1.937	-.701	1.226	1.978	6
7	4.315	1.243	.522	.628	.108	.862	.712	.864	-3.972	-1.728	1.321	-1.353	-4.499	5
8	-3.674	-1.401	-1.140	-1.637	.259	.272	.036	1.025	.910	-3.129	.314	-2.241	1.437	4
9	-2.673	-.878	-.464	-.509	.697	-.582	.511	-.287	-.186	.857	.977	2.473	.630	3
10	1.480	.930	.671	.985	.791	.341	.348	-.387	-1.186	-.726	-.436	5.462	.369	2
11	1.719	-.858	-1.061	-.778	-.451	.535	-.045	.736	-.111	-.463	-.582	-.023	.452	1
12	.573	-.346	.105	-.795	-.410	-.500	-.783	.664	.635	.521	.049	.222	.421	
n/m	0	1	2	3	4	5	6	7	8	9	10	11	12	

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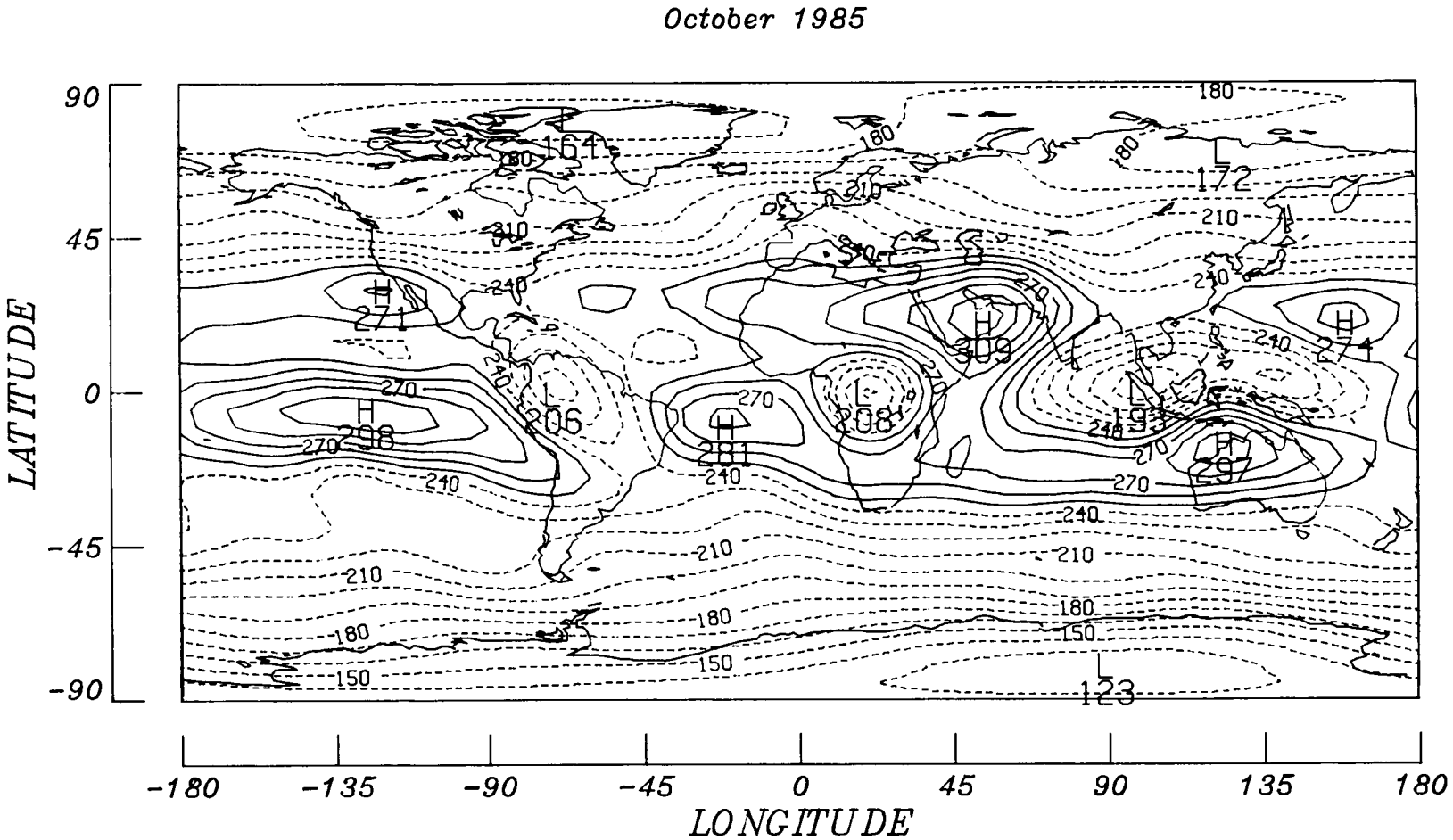
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Report Documentation Page

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15. Supplementary Notes

Atlas of Nimbus 6 data for July 1975 to June 1978 is presented in NASA RP-1185, 1987.

16. Abstract

An atlas of monthly mean outgoing longwave radiation global contour maps and associated spherical harmonic coefficients is presented. The atlas contains 84 months of continuous data from November 1978 to October 1985. The data were derived from the second Earth radiation budget experiment, which was flown on the Nimbus 7 Sun-synchronous satellite in 1978. This data set is a companion set and extension to a similar report of the Nimbus 6 satellite. Together these two reports give a data set covering a 10-year time period and will be very valuable in studying different aspects of our changing climate over monthly, annual, and interannual scales in the time domain and over regional, zonal, and global scales in the spatial domain.

17. Key Words (Suggested by Authors(s))		18. Distribution Statement
Earth radiation budget	Variability	Unclassified—Unlimited
Longwave outgoing radiation	Time series	
Nimbus 6	Broadband	
Nimbus 7	Wide field of view	
Deconvolution		
Spherical harmonics		Subject Category 47

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